Extending Architectural Affordance: The Case of the Publicly Accessible Toilet

Thesis submitted for the Degree PhD in Architectural Studies

Jo-Anne Bichard

The Bartlett School of Architecture
University College London
University of London

‘I, Jo-Anne Bichard confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis'.

Signed ……..……..

Dated ……..

Abstract

Publicly accessible toilets present a site of entrenched cultures of tolerance and intolerance that centre on our relationship with our bodies, and those of others with whom we share the space. This research uses the case of the publicly accessible toilet to demonstrate how the design of these facilities has continued to present a ‘special needs’ approach, opposed to inclusive design. Analysis of design guidance and user experiences of both the standard and accessible toilet accommodation highlights how current design and provision of these essential facilities contribute to ‘environmental pressure’ (Lawton, 1986). Thus current design continues to create barriers in the built environment that prevent wider access to the city and engagement with education, work and leisure opportunities it affords.

The thesis incorporates a reanalysis of secondary data from 166 able and disabled informants, which focuses on their experience of accessing and using publicly accessible toilets. It considers these experiences through the concept of affordance and makes the case for a shift from the built environment determining behaviour, to one in which the body affords experience of the environment.

Acknowledgements

This journey to the final thesis can be framed by the journeys the research informants experienced; difficult and frustrating, but ultimately one of relief. As with the object of this thesis, my thanks are divided by the culturally specific cubicles discussed herein:

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This thesis is dedicated to the memory of the “deaf git”, the “one armed monster” and the “crippled cow”, Frank ‘Bob’ Bichard and Sidney and Norah Skeet; aka Dad, Grandad and Grandma.

Contents

List of figures and tables.

Figures

Tables

1. Introduction – Problem Definition

1.1. Context of this research

At the turn of the millennium, the EPSRC's Sustainable Urban Environments (SUE) programme was approached by the Centre for Accessible Environments (CAE), who championed the idea of a research project focused on the accessibility of the built environment, specifically publicly accessible toilets. This was prior to any formal bidding process being set in place for RCUK funding.

The CAE argued that accessible public toilets were necessary to give disabled people access to the town centre and that a project to look at the barriers disabled people faced in finding and using provision contributed to urban sustainability.

The resulting research set out to test three key hypotheses;

- That the current accessible cubicle did not meet the need of wheelchairs users, who were the group it had been designed for.
- That the current cubicle failed to support people with profound and multiple disabilities and their carers.
- That the current cubicle fails to address the needs of other disabled people, such as those who are visually impaired and/or have stomas and other continence management concerns.

To capture user needs in a way that was accessible to designers the project proposed to create a series of personas or archetypal users, based on the work undertaken with participants of the research. However, the personas, there were 42 produced altogether, were formed from engagement with patient support groups, therefore based on the users' 'ability' and hence set in a narrative entrenched in the medical model of disability.

The research findings included;

- Results from a Toilet Audit Tool developed to assess current provision. This tool revealed the extent to which the accessible toilet did not follow recommendations so could not adequately afford the accessibility that it had been designed for.
- There was a diversity of user requirements, and the fact emerged that no one design could satisfy all needs as they were often contradictory.
- Accessible toilets were of no use if they were not strategically located in the urban fabric and the route to the toilet was not itself accessible.
- Users claimed provision as their own based around their perceptions of disability. Their expectations also followed a medical model based on their disability.

This reveals the paradoxes of this approach, that despite the user centred approach inherent in inclusive design which attempts not to define people by their disabilities, the way the research had to recruit appeared to drive the research back into a special needs paradigm, in which the current accessible toilet can be seen as symbolic of disability access that is also recognised as such by wider society. These paradoxes surfaced in the existing paradigm, in which an environment/ behaviour model was adopted where people *respond* to their environment and the environment *determines* behaviour.

The second phase of externally-funded research aimed to extend the previous programme, but with a focus on age associated continence issues within the built environment, and the design requirements of the standard toilet cubicle. Through deeper engagement with users and providers, the project set out to illustrate how an inclusive environment could be achieved with adherence to the needs of an ageing population, extending inclusive design within standard lavatory accommodation and therefore relieving pressure on the disabled cubicle. However, the qualitative based research methodology that comprised 20 participants was rejected in review and funding would only be awarded on a quantitative based sample of 101 respondents, shifting the focus of the

project from a design led approach to the standard cubicle to a design response to the issue of lavatory provision.

The research presented in this thesis presents a shift in the paradigm of the previous two studies; by re-analysing a selection of data from the projects without referring to user needs and by focusing on users' own stated experiences.

1.2. The Primary Research

This research grew out of two Research Council UK (RCUK) funded collaborative projects. The first, Vivacity 2020, funded by the Engineering and Physical Sciences Research Council (EPSRC) (GR/518380/01), ran from 2003 – 2008. The second, Tackling Ageing Continence through Theory Tools and Technology (TACT3), was a cross council funding initiative of the New Dynamics of Ageing programme managed by the Economic and Social Research Council (ESRC) (RES-353-25-0010); it ran from 2008 – 2011. As RCUK funded projects, each one was guided by a formal science paradigm that followed three key attributes, these were;

- That the research produce quantitative, objective and evidence based data.
- That its approach was exploratory and interventionist.
- That the projects produce environmental solutions, effectively re-engineering the built environment.

This latter point is especially pertinent, as it will be shown that such a solution reflected the discourse of the medical model of disability.

Within this paradigm, the work packages from which this research is drawn; Vivacity 2020 '*The Inclusive Design of Public Toilets in City Centres*, and TACT3 *'Challenging the Environmental Barriers to Continence'* produced 'user-centred' studies that attempted to challenge the existing paradigm of 'special needs' design solutions' (Hanson, 2002) by utilising a social model approach that is inherent to inclusive design. Inclusive design's social

approach, in which it is the barriers of the environment that creates disability, attempts to overcome the problems associated with the medical model of disability, in which the individual body is the focus of study.

1.3. Behaviour: Personas

The existing paradigm emphasised behaviour, and both the Vivacity and TACT3 projects incorporated the use of personas as a means of conveying user needs to designers. Initially the personas intended to emphasise the whole person, with goals and projects they wanted to achieve instead of needs. However, to develop the personas the research had to recruit from support groups, which grounded their networks within the narrative of the informants' disability and re-grounded the research within the narrative of the respondents' / informants' disability. An alternative means of data capture would have been to undertake a random sample of the population, yet this approach would not have been funded by the demands of the EPSRC and NDA (ESRC) funded research. Thus to carry out the research, the projects were required to reintroduce the concept of disability.

To construct the personas, the projects refocused the research design so that experience replaced behaviour with the personas aiming to capture people's experiences. This was determined by the demands of the research, which was required to deliver a design tool. However, the concept was reductive in that it distilled people's experiences, divided by the association of their body within a particular group, into a common language that was a shared, typical and ideal type.

1.4. Environment: Toilet Audit Tool

The existing paradigm emphasised the environment, which was investigated in both Vivacity 2020 and TACT3[1] projects through the development of a

[1] The TACT 3 Toilet Audit tool aimed to take quantifiable measurements of the standard toilet cubicle– and attempted to design a portable tool that could be used by informants to assess local provision. However, after piloting and due to the varying designs of standard provision (see chapter 5), and the information from informants, the research team abandoned the audit

Toilet Audit Tool. Part of the engineering focus of the EPSRC funded project had to focus on the design of the physical built environment, and to deliver this aspect the research team developed a Toilet Audit Tool based on the current design guidance of the British Standard BS8300 (2001) accessible toilet cubicle. The audit tool was very helpful as it quantified the lack of compliance with the recommended design guidance. The audit tool's major finding was that of 101 accessible cubicles in a range of cities and towns in England, not one could be seen to have followed the design guidance. However, it can be suggested that this finding in itself re-introduces the idea of environmental / architectural determinism and causality.

1.5. Extending Architectural Affordance: The case of the publicly accessible toilet

In this thesis the environment is replaced by a new emphasis on the individual's body. Issues around environmental / architectural determinism and causality are addressed by grounding this PhD in the idea of affordance (Gibson, 1979) to replace determinism. Affordance is a more elastic concept then determinism and admits a relationship between the environment (and its design) and the informants' coping strategies, as opposed to the way it is assumed people should (normatively) respond to the environment. For example an affordance model of environment *and* experience endures going downstairs on your bottom as acceptable instead of attempting to step down with difficulty. Experience is also a key re-orientation in the post-modern narrative as it replaces the idea of behaviour as the outcome of people's relationship with their surroundings and settings.

Hence, this thesis proposes that the determinism and response to the built environment is shifted towards affordance and experience, and therefore represents a paradigm shift in focus for inclusive architectural design. This shift is set out below.

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tool and focused on the information barriers to accessing toilet provision that informants and providers had raised.

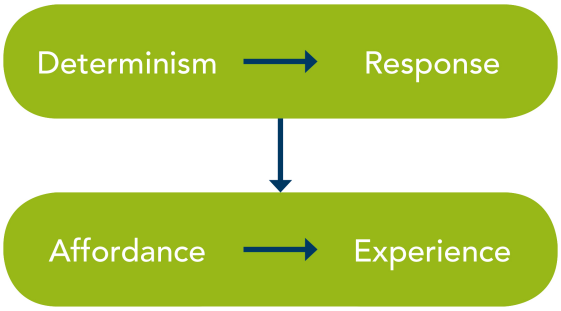

Figure 1. The paradigm shift of the thesis.

This research adopts the biopsychosocial model in re-reading a selection of interview transcripts from both the Vivacity 2020 and TACT3 projects to reanalyse them in terms of shared affordances *and* shared experiences as opposed to shared needs and shared disabilities and behaviour.

The emphasis on the environment is shifted towards an emphasis on the body. Determinism shifts to an emphasis on affordance and descriptions of experience shift towards descriptions of behaviour, as set out below in figure 2.

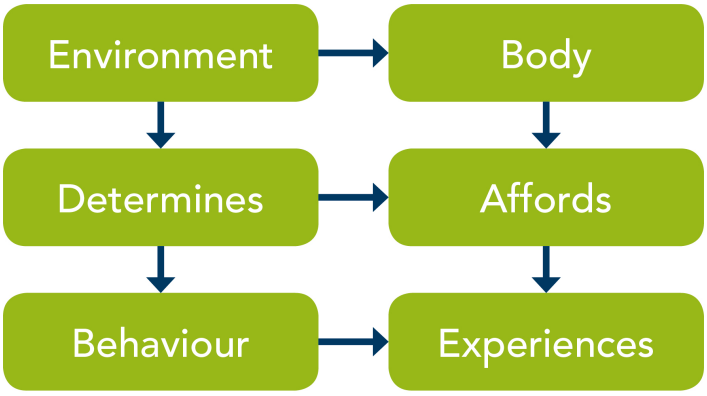

Figure 2. The Cultural shift of the thesis

1.6. Secondary Analysis of VivaCity 2020 and TACT3 data.

This thesis incorporates a secondary analysis of a selection of qualitative data collected in both RCUK projects by the author. The projects generated 306 interviews in total, of which 166 have undergone secondary analysis for this

thesis. The interviews were conducted either on a one-to-one basis or through focus groups and their breakdown is shown below (table 1).

Participatory Method	
Interview	112
Focus Group	54
Total	**166**

Table 1. Secondary analysis of RCUK data for this thesis

Interviews were chosen for secondary analysis based on their inclusion in the original research. The data presented in this thesis was not fully represented in the VivaCity 2020 and TACT3 research due to the projects' focus on creating personas that distilled key elements of the participants' responses but did not explore the details of their experiences of current provision. The experiential focus within this thesis aims to highlight how the respondents' experiences of the built environment provide an extended example of user experience and therefore contribute to the holistic challenge of the body's need for toilet provision in the built environment, with which designers can work.

1.7. The Ethnographic Present

The research for this thesis has been undertaken on a part time basis, and began in February 2005[2]. During this period a number of changes have taken place in which the research can be seen to be located. The primary EPSRC research was initiated in response to Part 3 of the Disability Discrimination Act (DDA) (2004), this legislation has now been incorporated into the wider Equalities Act (2010) which brought together over 100 separate regulations (Equality and Human Rights Commission, 2014), including the rights of people with disabilities. In addition, the design guidance, issued from both the British Standards Institute and the Building Regulations Approved Document M, and

[2] This incorporates two periods of extended leave from the research for professional (new research position) and personal reasons. See Appendix 1 for researchers extended research activities during the production of this thesis.

reviewed within this thesis, has also undergone a series of updates. However, as these revisions took place after the period of primary research, they are not reflected in the actual experience of the users who contribute to this thesis, and the documents have not been included within this work. This thesis is therefore grounded in the ethnographic present as defined by Sanjeck (1991) as the 'ethnographer's presence during the period of fieldwork' (ibid,1991:609)' and hence records the users' tacit knowledge based around the forthcoming legislation of the DDA (2004) and current design guidance (BS8300 (2001), BS6465 (1996) and Approved Document M (2004)) in operation at the time.

1.8. A Bio-Social Model for Inclusive Design

This thesis seeks to apply the biopsychosocial model of disability for inclusive design. The history of the inclusive design paradigm has been set within a social model of disability, and a focus on the disabling aspects of the environment and/or product, which design through direct engagement with users, can overcome. However, inclusive design methods are often undertaken in collaboration with people of a singular disability, and can be seen to not only replicate the social model's focus on the environment / product, but also shift into the medical model in which use is framed by the individual body's abilities. This continues to produce outputs that can be termed as 'special need' responses opposed to more defined and refined inclusive design. The biopsychosocial model of disability aims to recognise the diversity of the disabled body in its ecological context, namely the built environment and its supporting products and services. This thesis presents the experiences of bodies that are both visibly and invisibly disabled, as well as abled and ageing, to draw together these seemingly discreet categories and present evidence that brings together the users' combined experience, and to show how current design of lavatory provision may not afford the use it is intended for.

1.9. The presentation of this thesis.

This thesis is presented over nine chapters that will discuss the following:

Chapter 1; Introduction and problem definition sets out the background to the research for this thesis and introduces the key concept that the thesis will address.

Chapter 2; The Body in Architecture and the Built Environment presents ways in which the body has been framed within the discipline of architecture and the built environment. It explores the representation of the body as agents that move in space virtually (Penn & Turner, 2001), in real time (Borden, 2001) and through architectural templates of the body (Imrie, 2003). In further explorations of the body the chapter reviews the models of disabilities that frame design responses as well as population data to highlight how designing for bodies of difference cannot be framed as a minority response. The chapter ends by overviewing the inclusive design response and emphasises how the current social model framework might be re-evaluated in view of a biopsychosocial model of disability.

Chapter 3; The Experiencing Body presents the need for excretion as an experience of the body and reflects how this experience has been addressed by design (Kira, 1976). The chapter takes a journey perspective of accessing toilet provision within the city, to illustrate the body's movement through the built environment and draws attention to how the lack of suitable toilet provision can be considered a 'weak link' in the metaphor of the transport chain that frames this journey. The chapter draws upon issues of gendered provision to highlight how, in the history of design for this specific body experience, there have always been bodies that have been excluded from provision and extends this to consider the ageing body and the need to meet this social challenge.

Chapter 4; Understanding the Interior of Public Lavatories evaluates the design guidance that was in use at the time of fieldwork that contributes to this research. It presents the guidance as laid out by the British Standards Institute and the UK Government's building regulations as well as specialised guidance and recommendations produced by the Women's Design Service (1990) and The Centre for Accessible Environments (1988, 2004).

Chapter 5; Theoretical Underpinnings and Methodological Approach presents the thesis' 'cultural turn' from the two collaborative interdisciplinary projects, and outlines the methodological approach that framed the prior research and that has been reframed through secondary analysis for this thesis. The research for this thesis has been qualitative, and a historical overview of qualitative research is discussed here. The use of secondary analysis of the original data highlights the reframing of the data through the theme of affordance (Gibson, 1979), analysed through the experiential method (Kidd, 2008). This chapter also presents the incorporation of narrative analysis (Chase, 2008) into the work and seeks to present how the following chapters shift the prior research focus from a deterministic response to the environment to one of the informants' experience of the environment.

Chapter 6; Affording Access to the Publicly Accessible Toilet presents the informants' experiences from a journey perspective and highlights how the concept of affordance can frame how the body orientates, navigates and locates publicly accessible toilet provision within the built environment. Once located, the body's journey continues until the correct cubicle for use is identified and the affordance for design consideration that should be taken into account.

Chapter 7; Affording Urination and Defecation presents the informant's experiences of the primary function of publicly accessible toilet provision for excretion. Having identified the correct cubicle for use, informants describe their experience of excretion and how current provision may not afford this

action. The chapter describes distinct design elements for capturing the products of excretion through the use of the WC pan and/or urinal and the affordance of bodily hygiene through experiences of accessing toilet paper.

Chapter 8; Affording Dignity, Safety, Security and Comfort extends the affordance approach to highlight how the informants' experiences of the publicly accessible toilets interior design (the cubicle and the space beyond the cubicle), afford seemingly esoteric concepts. The affordance of dignity is surmised through the design and provision of the toilet flush and bins to dispose of sanitary waste and for washing and drying of hands after toileting. The affordance of safety and security is explored through the provision of locks to secure the immediate environment for the privacy of excretion as well as the sense of security experienced by users, such as lighting to ensure the environment is safe for the self and from others, especially those whose use of provision may be for non-toileting behaviours. Finally, interior furnishings such as coat hooks, shelves and mirrors are introduced to illustrate how comfort is experienced by users and hence can be afforded in the consideration of the design of the provision.

Chapter 9; Concluding Discussion will show how the shift of emphasis from bodily function to bodily experience presents new knowledge of peoples' experiences of the built environment. Such knowledge could only be presented through qualitative research, which has been the primary methodology of this thesis. It therefore contributes to improve our understanding of environmental pressure over and above functional approaches to design. The framing of shared experience between a diversity of able and disabled users demonstrates that the unity of experience transcends the diversity of physically centric labels that are placed on people by design and wider society.

2. The Body in Architecture and the Built Environment

The body is what I immediately am… I am my body

(J.P. Sartre in *Being and Nothingness (1966) 428-460*)

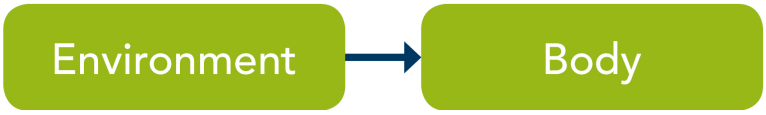

Figure 3: The shift in focus from environment to body.

2.1. The body as subject.

In this thesis the starting point is the shift and/or turn from the environment to the body (figure 3) hence its centrality in chapters 3 and 4 where this change of emphasis is explained and justified. This does not mean that the environment is unimportant or ignored – more that the analytic 'gaze' is shifted from the direct physical environment to the body of the experiencing subject.

However, 'the body' cannot be taken for granted. In *Phenomenology of Perception,* Merleau-Ponty (1962) states 'I am not in front of my body, I am in it or rather I am it' (1962;150) and presents the body as central to experiencing the world around us and therefore as an object of interest in itself. Foucault's (1977) post-structuralist analysis presented the body as a socio-cultural product, moulded and shaped socially according to society's norms and goals. 'Disciplined' and 'docile bodies' as described by Foucault (1977) were needed for the emerging factory system of the nineteenth century. New forms of education and reform were needed to 'train' the body and conform it to the new receptive actions and gestures to operate machines, becoming part of the machine itself. Foucault described 'discipline' as *'no longer simply an art of distributing bodies, of extracting time from them and accumulating it, but of composing forces in order to obtain an efficient machine'* (ibid,1977:164), and suggested that 'bio-power' aided the strategies

and tactics needed to control the transition of populations from rural environments to city enclosures.

Boyer (2006) observes that Foucault's discourse of bio-power positions the body 'around two different poles'. The 'anatomical politics of the body; secondly 'the surveillance and disciplines of the population'. Boyer's post-war perspective suggests that after World War II, there was a mutation of the technologies of the bio-power practices of calculation and information, in which 'direct therapeutic intervention… through regularity or disciplinary controls' shifted the focus of bio-power from surveillance and discipline 'to preventative administrative management of populations at risk' and 'outlined anomalies against a background of normality'. This, argues Boyer, has led to demographic analysis as a form of 'data manipulation and computerised modeling' (Ibid,2006:44).

In architectural theory, the body appears as a supporting player, designed for but only if necessary. In *Architectural Theory since 1968* edited by K. Michael Hays (1998), a compendium of recognised key theoretical texts in the field, the index cites 20 references to 'the body' in comparison with 40 to 'the city' and 62 to 'modernism'. Those references to 'the body' focus on one that is, in many ways, static and the continuing tradition of the body ideal, a reflection and projection of the normative model for the architectural ideal.

2.1.1. Agents of Architecture: Space Syntax

The use of computerised modelling within architectural research has extended the form of the body to the virtual subject and 'agent-based' model. This has been a popular method in Space Syntax research, which Penn & Turner (2001) describe as *'methods… to allow architectural space to be represented and its pattern properties quantified so that comparison could be made between differently designed buildings or urban areas... a primary effect of spatial configuration on social function resulted from the way space patterns*

determined pedestrian movement patterns and so co-presence between people in space' (ibid,2001:2).

Space Syntax seeks to connect space design with social function, and initially incorporated computational models of environments based on lines of sight, and the connectivity of space supplemented with observational data on people's movement. However, observational methods were supplanted by agent simulation to replicate 'population level behaviours' (ibid, 2001:3). This digital method has proven very successful in modern urban developments and the Space Syntax (2014) website cites many projects on a global scale that have utilised the practice in assessment of city space and building interiors.

A key theme that emerges in Space Syntax agent based modeling is the journey as purpose. Hillier and Iida (2005) set out a journey that is eventually based on statistical preference of 'closer rather then remote destination' (Ibid, 2005:556) and Turner and Penn (2002) ask *'why would someone walk down a street if not to buy a loaf of bread, go to work, or to meet and interact with someone, something'* (Ibid, 2002:474). Such a proposition sidelines two important elements; firstly, that not everyone can walk and therefore the quickest possible route might not be the physically accessible route. Secondly, it negates the movement of the *Flaneur* from modernity; the stroller as envisaged by Baudelaire (1964), capitalist critique as suggested by Benjamin (2002) or a challenge to a lack of access as asserted by Jenks (1995). Boyer's (2006) extension of Foucauldian bio-power suggests that such programmes of *'management systems… strip individual and local details from their context, blend characteristics together in databanks and statistically manipulate differences into homogenous pattern'* (Ibid, 2006:45).

2.1.2. Agent representation

The inhuman is merely… the mechanical

(J.P Sartre cited in Boyer,2006:27)

In creating agents to move about the Space Syntax's coded space, certain attributes have been designed into the agents' ability. They reflect the architectural norm of a human figure (head, torso, two arms, two legs), they walk at the same pace, but unimpeded by shopping, children, pushchairs, or with the aid of a mobility device (walking stick, walking frame, crutches, wheelchair). They do not encounter any physical barriers. They have 170 degrees of vision and a visual acuity of 11 degrees, and are therefore considered by their creators to have a degree of 'cognitive' structure (Penn & Turner, 2001; Hiller & Iida, 2005). Confusingly, the ease in which these agents move around the virtual landscape, albeit one based on actual physical space planning, is referred to as 'accessible' (Hillier & Iida, 2005:557). Whereas the 'real time' space may be littered with numerous barriers and obstacles that realise an inaccessible space to those who do not reflect the physical and cognitive attributes of the agent based simulation. Whilst access through a line of sight may make the Space Syntax methodology operational the 'reality' that is digital space, the details of 'real' space such as a dearth of adequate paving surfaces, steps and bollards and poorly located bins, or generally inaccessible surfaces, could make the line of sight and the promise of an 'accessible' environment frustrating to those who cannot access it. Boyer argues that such programmes of *'cyberscience has dissolved the body into computer bits and mechanical processes. It raises the issue of agency by placing the human outside of the world to which it belongs… there is no body in the city'* (ibid, 2006:27).

The spatial reality of the virtual Space Syntax city is populated by agents who ironically lack 'agency', and while this may reflect the movement flow of the population, it does so of a virtual population whose numbers comprise, and are complicit in, the architectural template of normalcy.

2.1.3. Agent realisation: Skateboarding Space & the City

In contrast to the agent simulations roaming the digital city, Borden (2001) introduces agents of flesh and bone into the cities' space in his study of

skateboarders' use of the city. For Borden, the discreet boundaries of previous study's have focused the body on the 'province of medicine', the landscape as the 'province of geography' and the built environment (including its space) as 'the province of architecture', and led to a 'fetishism' of space and /of the designed object *'that erases social relations and wider meanings'* (ibid, 2001:7). Borden focuses his work on the experience of the skateboarders who navigate his work and the city. Whilst acknowledging that the subject of experience has been present in architectural historical analysis, he suggests the human subject has been presented as *'a universal with a constant set of values, senses (primarily sight) and mental faculties'*. Fixed with these attributes, Borden posits that this subject also lacks '*social or political connotations to experiences'* (ibid, 2001:8).

Borden suggests that; *'in terms of skateboarders' relation to architecture, its production of space is not purely bodily or sensorial; instead, the skater's body produces its space dialectically with the production of architectural space'* (ibid, 2001:101). Such dialectics in the production of space through the experience of the body will also be revealed in the experiences of respondents within this study. For as Borden stresses, the city is *'the immediate reality, the practio-materiality with which the urban can not dispense'*. It is what Borden describes as an 'architectural fact', taking on a particular form that creates 'constraints' but also 'openings' (ibid, 201:194). Through the experiences of the skateboarders this work presents the city as a series of 'micro spaces' opposed to grand urban plans, within which the architecture lies *'beyond the province of the architect and is thrown instead into the turbulent nexus of reproduction'* (ibid, 2001:217). This hints towards the skateboarders' reclamation of the space for their specific use through their interaction with the skateboard as a 'fifth limb', and shifting the intended ideal of the space through their interaction. This analysis of skateboarders' use of the city shows how architecture, the space of the city and its attendant fixtures and fittings can be re-imagined, re-interpreted and re-formed. The skateboarder sees the city through a variety of lenses; ones that affords

opportunity of practice in areas of the urban environment not consciously designed for such experience.

Borden argues that skateboarders, through their re-interpretation and use of city space, have become *'part of a long process in the history of cities, a fight by the unempowered and disenfranchised for a distinctive social space of their own'*. This confrontation puts the experience of the body as central in challenging the 'space of no' and forming the 'space of yes' and the 'reaffirmation of life' (ibid, 2001:260).

2.2. The Body as Architectural Template

> *Architecture is intended for the production of things – either products as commodities in factories, knowledge in universities and museums, labour power in housing, information and decision in offices and so on. In this sense all buildings are places of the expenditure of energy, engaged in the production and distribution of thing*s'. (Borden, 2001: 231)

The design of the built environment comprises varied structures of architecture, used for the numerous acts of human social life and well-being, required for the life course of the biological body. These structures include; homes, schools, workplaces, places of worship, places to consume - be it food or goods, places to care for the body, and finally places to dispose of bodies. Amongst all of these designed spaces, standardised in design recommendations, legislated for in building codes and designed for the public body, there is the requirement for an inner space, a sanctum to meet the private daily need of the body in disposal of its waste. In architecture a unifying factor is that these structures were designed by bodies for 'other' bodies. This does not suggest a neat binary opposition for design to adhere to, instead 'other' bodies are found along a spectrum of body variations. However it is the subsequent form of a generalised human body, one that

negates the experience of bodies outside of this norm, which has become the template for the design of the built environment.

In *Architects' conceptions of the human body* (2003), Imrie highlights how, in the discipline of normal scientific architectural theory and practice there has historically been a failure to acknowledge the physiological diversity of the human body. Instead, the body to be designed for is based on the conception of a 'normal' body, 'post-Galilean' in its construct and a 'machine' subject to 'mechanical laws', and very much a quantifiable object that reflects a quantitative approach. This standard *model* of the body, as envisaged by De Vinci's Vitruvian Man (figure 4) is essentially one 'of geometric proportion and symmetry… upright, able bodied, male' (ibid, 2003:49). Imrie notes Pythagorus's dictum, "that man is the measure of all things", became the set template for 'proportions of the body as the basis for design'.

Figure 4. Da Vinci's Vitruvian Man. Source Jakub Krechowicz, Dreamstime.com

This template comprises a head in which the sense organs are located, a central concentration of nerves and receptors that comprise two eyes, two ears, a nose and a mouth. The head is attached to the body by the neck, itself attached to the upper torso from which there are two arms on either side, each ending with a hand comprising of four fingers and a thumb. The upper

torso descends to the lower torso, which can be seen to mirror the geometry of the upper body, with two legs on either side, each ending with two feet each with five toes. A central concentration of nerves and receptors between the legs comprises of one of two designated sexes[1], male or female. Imrie highlights that within architecture, this geometric representation of the body is often only represented by the male sex[2], and cites Grosz's position that such singular representation illustrates that the *'phallocentric nature of architecture is a disavowal of the 'feminine' and a discounting of the female body as a realm of experience'* (Imrie, 2003:50).

In the history of architecture and the development of the modern discipline, the Vitruvian body is still the template from which universal standards in architecture are applied. It is this body, such as that illustrated by Neufert in *Architects Data* (*figure 5*) that has become the normative for built environment design.

Figure 5. The Man from Ernst Neufert *Architects Data* 2011:15.

[1] I acknowledge that there are possibly more then two sexes (see Kessler 1998 for discussion on intersex). However, the majority of modern human societies only legally recognise two biological sexes.

[2] Buchli (2013) notes Laqueur's (1990) assertion that 'in the Renaissance the essentially androgynous or unitary nature of gender, male and female were degrees of relative expression of one gendered bodily form, which did not bifurcate until the eighteenth century in a binary understanding of distinctly male and female forms' (Buchli,2013:137)

If the built environment and its supporting architectures are based on the normative body, it is one of a prescribed size and corresponding ability. This fixed and static body omits bodies that are younger, smaller, older, weaker, taller or shorter and who may find architectural tropes designed for the normative body difficult to negotiate. The body, as illustrated by Da Vinci and Neufert, may fit the standardised model of the architect's 'Human Figure Template' (figure 6), yet a proportion of these bodies, normative in perception, may find a built environment, designed for them by 'other' bodies, does not quite fit.

Figure 6. Metric template of human figures. [3]

2.2.1. Positioning the Body

From interviews with architectural course leaders and practicing architects, Imrie (2003) documents *'the contrasting ways in which Western (or modern) architectural theories, traditions and practices conceive of the human body and of it's multiple differences*' (ibid, 2003:51). Imrie found that the formative training of the architect involved very little reflection on the wider forms of human bodies that inhabit spaces framed by architectures. He describes how much of the architect's training echoes that of the 'self' in art training, and is based on the architectural student's own body and its use of space, and therefore becomes the template from which the discipline develops.

[3] It should be noted that a separate template is available for the Female Figure' in which the figures are depicted carrying shopping bags.

Imrie found such self-referential perspectives echoed in professional practice, which had the *'potential to develop a heterogeneity of body images and knowledges based on architects' experiential understanding of their bodily interactions with(in) diverse built environments'* (ibid, 2003:56). This account illustrates how design stereotypes the user, who experiences the environment in a formulaic and predetermined way. The body, albeit normative is lost to the function being designed for, becoming 'shoppers', 'patients' and 'pedestrians'. Individual abilities and experiences vanish as the body is pluralised and lost in the crowd (ibid, 2003).

2.2.2. 'We're all the same'

The 'normal' body as represented and used in the design of architecture and the built environment can also be considered an anomaly. It can be robust and resilient but also weak and rigid. It is comprised of hard bones and soft flesh that can be vulnerable to other materials smaller, harder or sharper then the body's, for instance a virus such as rubella or polio, a car crash or shrapnel from a weapon. It can therefore be transformed from the normative model at any time, from development and birth and then throughout its life course. The body can change, and re-function itself by the loss of a hand, an arm, an eye, a leg, a foot and internal organs such as the bladder or a kidney. It is robust and can, in many industrialised societies, survive extreme events upon it. The configuration of a loss of limbs or all limbs, some internal organs and/or senses, can be addressed not only through life saving techniques at the point of loss but through artificial limbs, eyes, and transplants of organs[4], as well as a host of technologies to support the body; the walking stick, the navigation aid, the crutch, the wheelchair, the hearing enhancer[5], the colostomy and urostomy bag.

[4] Internal organ transplants are still most common although since 2001 hand and limb transplants are being undertaken.

[5] I use the word 'enhancer' rather then 'aid' here as most hearing technologies enhance the hearing loss of the user and the term hearing aids revert to the medical model.

Some bodies may not experience such events, and yet as with all biological organisms they will weaken and age. The tools and technologies that address the response of an extreme event upon the body can also be used to address the biological response of ageing. Wendell (2006) emphasises the diversity of human bodies, '*in size, shape, colour, texture, structure, function, range and habits of movements and developments'* (ibid, 2006:248), also recognising that the body is a dynamic entity constantly changing by the ageing process. Therefore the technologies of aiding disability as referred to above, serve dual functions, as they also support the ageing body. The body that changes and ages does not fit the body's 'normal' template used in design and is often perceived as an abstraction that does not fit the design of the built environment, an environment which Finklestein (1993) notes is always represented as neutral.

The normative human figure and model for design, even through the modernist lens of Le Corbusier (figure 7), represents a static and frozen moment in the life of the body, a particular temporal mode (upright, able) and predominantly androcentric[6]. Hence, it is proposed that it is the built environment and its supporting architectures', designed by bodies for bodies *like theirs*, which does not fit.

[6] A report in the *Independent* 25.02.11 highlighted gender differentiation of architects with 64% male 36% female.

Figure 7. Modulor by Le Corbusier (Wiles, n.d) [7]

2.3. The Ageing and Disabled Body

Help Age International (2013) have stated that 'climate change and ageing are two of the biggest issues facing humanity this century'[8]. The United Nations estimates that one in ten people are over 60 and this is projected to increase rapidly as will be discussed below. In addition, over half the world's ageing population live in urban areas, and this is also set to increase with a rise in urbanization (Smith, 2009).

Priestley (2004) makes the point that it is the ageing process that is commonly associated with the onset of impairment, and that with the rise of ageing populations the increase of age-related impairments pose 'a significant challenge' (Ibid, 2004:150). It is estimated that only 15% of people with disabilities are born with their impairments' and that the majority of the disabled population become so over the course of their life (Siebers,

[7] Imrie (2003) notes that 'Le Corbusier regarded the human body as a contaminant that countered the ideal of geometrical purity, with the capacity to destroy the visual quality and intrinsic meaning of the architecture' (ibid, 2003:47).

[8] It is also recognized that these two challenges are not mutually exclusive, and that increased ageing populations will contribute to climate change (Evans, 2012).

2006:176). The consideration of disability as a life course event, and even a 'fact of life', opposed to a biological affect on a minority population, challenges mainstream society by reminding it that ability can become disability. Yet, theories of ageing often overlook consideration of impairment and the discussion on disability (Priestley, 2004).

Similarities in the social construction of disability and aging, in terms of vulnerability and dependency reflect similarities in structural categories that are socially produced, primarily through the exemption from the adult labour market (Priestley, 2004). In industrialised societies such as the UK, the majority of people who are defined as having a disability are over retirement age, and having an impairment is widely considered a social norm of the ageing process, yet Priestley notes, older people with impairments *'are rarely regarded as disabled in quite the same way'* as children, young people and adults[9]. The 'demographic truism' of age related impairment not being framed as 'disabled' extends to the disability activism movement, who have tended to focus on issues that affect disabled people of working age and younger, and can be suggested that even activists frame disabled people's wider social contribution in terms of economic worth (ibid, 2003).

Despite their similarities within wider social constructions – age and disability remain distinct categories. Whilst people who age may not be considered 'disabled', disabled people are often not considered in the ageing process. Priestley (2004) suggests this is due to their exclusion from wider economic considerations such as active participation in the labour market[10]. However, it can also be contended that wider social change is helping re-evaluate disabled people as members of an ageing population, as increased medical knowledge and management of chronic health conditions results in increased

[9] Conversely policy and care agendas often groups older and disabled people together and as result seek to merge the needs of a teenager with those of an octogenarian (Priestley, 2004).

[10] With ageing associated with retirement and release from the labour market, Priestley contends that if disabled people are not in work they can not be retired from work and hence do not fall into the ageing category, Priestley focuses this perspective on people with learning disabilities.

longevity for all members of society including those with disabilities. In short, conditions that result in disability from genetic, developmental, life event and ageing, and that once may have lead to early mortality are now managed more effectively with drugs and/or complex medical interventions (surgery, implants as well as wider assistive technologies). Thus, we see a merging of what were previously two distinct categories, those who were disabled *by* age and those who are disabled *and* ageing [11].

2.3.1. Creating Access to the Built Environment

The physical access of people with disabilities to the built environment was first addressed by the Chronically Sick and Disabled Persons Act (1970), which stressed that access to public buildings, should be 'practical and reasonable' (Barnes & Mercer, 2010). The act was amended in 1976 to include access to workplaces, yet as Imrie and Kumar (1998) note, the legislation and the subsequent recommendations of the British Standard Codes of Practice for Access for the Disabled to Buildings (1979) was not positively and widely adopted by built environment professionals. The lack of uptake of the recommendations persuaded the government of the day to amend the Building Regulations, bringing Part M into force, and stipulated that all new buildings be accessible in design and construction, albeit only focusing on the level of entry and the needs of people with physical disabilities (Barnes and Mercer, 2010).

2.3.2. The Legal Body

In 1995 the Chronically Sick and Disabled Persons Act was revised to become the Disability Discrimination Act (DDA)[12]. This legislation defines people as disabled if they have *'a physical or mental impairment which has a substantial long term effect on their ability to carry out normal day to day activities if it affects one or more of the following'*:

[11] See Appendix 2 for overview of distinctions of disability and impairment.
[12] The DDA was replaced by the Equalities Act in 2010. Due to the ethnographic present in which this thesis is set the subsequent revisions under the new act would not be relevant to the research described herein.

- Mobility
- Manual Dexterity
- Physical co-ordination
- Continence
- Ability to lift/carry/move everyday objects
- Speech
- Hearing
- Eyesight (unless corrected by spectacles)
- Memory / ability to concentrate, learn, understand
- Perception of risk of danger

(Disability Discrimination Act, Schedule 1.1995)

Underlying this definition is an implicit assumption of 'normal', and an emphasis on the physical impairment as a barrier preventing 'normal day-to-day activities', and essentially frames the disabled body, which cannot undertake these normal activities, as the opposite and therefore abnormal. This dichotomy and its oppositional positioning re-enforces the perspective of normality in the design of the built environment, in which the perceived majority of 'normal' bodies move unimpeded and with ease. In defining disability this way, the onus is placed on the individual, whose 'abnormal' body is expected to adapt to an unchanging 'normal' environment that evolved 'naturally' to fit the normal majority.

The DDA attempts to address and subsequently remove social, attitudinal and physical barriers experienced by disabled people through discrimination in the workplace, education and in Part Three of the of the Act, in the wider built environment, including access to architectures that deliver goods and services. Yet the legislation continues to reinforce disability as the 'abnormal body' within the 'normal environment', rather then highlighting the inherent restrictions of an 'abnormal environment' for a 'normal' person with a disability.

Disability effectively challenges the representation of the body and if considering the list of physical attributes assigned to the DDA's definition of disability, they can also be applied to the development of the child as well as the later stages of adult life, reflecting, as Siebers (2006) stresses, that most life cycles run from disability to temporary ability and back to disability.

The DDA requires that 'reasonable adjustments' be made to reduce the physical barriers that prevent access for disabled people. However, what constitutes 'reasonable' has been contentiously debated. By 2005, a decade after the act's introduction, less then 20 per cent of London's public buildings were considered mobility accessible', and 80 per cent of pubs, clubs, restaurants and other leisure facilities were rated less then satisfactory (Barnes and Mercer, 2010).

2.3.3. Models for the Disabled Body

To understand bodies that differ from the normative model as perceived in design templates by the architectural discipline, a number of 'models' have been constructed to communicate bodily difference. These will now be examined in direct reference to disability.

2.3.3.1. The Medical Model.

The Disability Discrimination Act's definition of disability draws on the physicality of what the body cannot do. This echoes the 'medical' model of disability, which focuses on the disabled body as abnormal and/or host to a disorder or deficiency that limits functionality in comparison with a medical perspective of the 'normal' functioning body (Imrie, 2001). The medical model has also been called an 'individual' model and represents the disabled body as the site of an 'intrinsic deficit or personal flaw' (Tremain, 2006), that can be treated, rehabilitated, and/or aided by devices. Imrie (2001) stresses that it is important to consider the medical model of disability in consideration of the built environment and its architectures, as it helps to understand the continuing failure to create more accessible environments. As long as

disability continues to be seen as an ‘individual’ matter that can be treated and rehabilitated, if not ‘cured’ by medical approaches, designers responsible for creating the built environment will continue to be absolved of responsibility for the lack of creative engagement with the needs of people, and especially the needs of those with impairments (ibid, 2001). Within this context, designs that create access to facilities as an afterthought can be viewed as mobility aids; supplementary features placed within the built environment and its supporting architectures after the design process, rather then a seamless part of the process and its resulting environment (Goldsmith, 1997). Such afterthought can be viewed as a retro-fitting of public space (Hanson, 2004) as well as a form of built environment and architectural assistive technology that is well meaning but can be considered to still stigmatise the disability and therefore is not inclusive (figure 8).

Figure 8. The ramp as retro-fit of the built environment and future archaeological signifier of Part 3 of the Disability Discrimination Act. Note sign to the right of picture denoting this is the ‘wheelchair access’ (2007).

2.3.3.2. The Social Model.

In contrast to the ‘medical’ and ‘individual’ model of disability with its onus on the body’s inability to access the design of the built environment, the social model proposes, in short, that it is society that fails to recognise and accommodate the diversity of impairments amongst its citizens (Oliver, 1983). Within the built environment, it is the design and supporting architectures that

disable the body, and therefore limit disabled people's full participation in society.

Goldsmith (1997) argues that people with impairments are denied access to social space, not by their bodies, but by the architecture of the environment, thus people with disabilities are 'architecturally disabled'. In using a socio-cultural model of disability the environment (encompassing the social, economic and physical), actively produces disability by creating environmental barriers. This results in the person with disabilities being denied the opportunity of independent living in the face of the obstacles in cities and urban centers, and also limits access to suitable housing, public transport, public spaces and buildings, and by association the services that are provided within these spaces.

Within the UK disability movement, the social model has become the dominant discourse from which disability activism and many design responses have emanated (see Goldsmith, 1997; Gleeson, 2001). Yet, the social model also presents the disabled population as somewhat homogeneous, especially to those who may not be aware of the diversity of disability (Barnes & Mercer, 2010). Within the wider built environment such perspectives on disability can be re-enforced by the universal pictogram or International Symbol of Access (ISA) (figure 9) that shows a figure in a wheelchair[13]. Ben-Moshe & Powell (2007) suggest that the ISA symbol represents a single perspective of disability, that of a person who uses a wheelchair, and illustrates that it has become *'ubiquitous not just as a symbol of access, but of disability itself'* (ibid, 2007:495). They illustrate how the ISA has produced ambiguity between 'disability' and the 'person' reinforcing a common cultural perception that to be disabled is to use a wheelchair and that such ambiguity manifests itself within the built environment concerning issues such as parking spaces, and as Hanson *et al* (2007) have demonstrated, the provision of toilet facilities.

[13] In addition disabled people may also see the wheelchair as a tool of liberation, affording more ability and freedom, and therefore not a symbol of disability, as it is currently prescribed.

Figure 9. International symbol of access incorporated into signage for the accessible toilet.

Critics of the social model of disability suggest that the relationship between the body, the self and the environment 'are not as neat and unambiguous' as the model proposes (Freund, 2001). The social model has focused and succeeded not only on the removal of barriers, both physical and legislative, but also amongst disabled people themselves, offering a 'social oppression' understanding that was also liberating for many people with disabilities (Shakespeare, 2006). Yet the social model has also *'created entailments which generated problems both at a political and conceptual level'* (ibid, 2006:31). Shakespeare lists three specific difficulties arising from the social model: Firstly, that if disability is a shared experience then the recognition and organisation of disabled people based on bodily difference becomes redundant and problematic with different groups of disabled people competing with each other over services. Secondly, the positioning of the social model of disability as based in the relationship between the society and the disabled body frames any attempt to mitigate or cure the body with 'intense suspicion'. Lastly, *'if disability is not understood in terms of individual experience, but as the product of structural exclusion, then the number of disabled people no longer becomes relevant'* (ibid, 2006:32).

To ignore people defining themselves by their disability, or to reject medical interventions is not logical and to not have an understanding of the number of disabled people in society, may prove difficult for the realities of public expenditure, budgetary constraints and service planning (ibid,2006). Therefore the social model *'has now become an obstacle to the further development of the disability movement and disability studies'* (ibid,2006;52).

The medical and social model of disability can be seen as binary oppositions that fit neatly into a larger prescribed perspective on the world. Standing opposed to each other, these models have been criticised for the focus they give to different aspects of disability. The medical model is seen as ignoring social considerations whilst the social model does not take into consideration the reality of peoples' physical needs and limitations. In an attempt to consider a more rational approach to disability, a third perspective has emerged that addresses the biological aspects of the disabled body as well as the social values of disablement.

2.3.3.3.The Biopsychosocial Model

In 2001 the World Health Organisation revised *The International Classification of Impairment, Disabilities and Handicap (ICIDH)* to become *The International Classification of Functioning Disability and Health (ICF)*. Barnes & Mercer (2010) set out the course for this revised classification as acceptance of the dominant medical model in the previous classification, diverting attention away from environmental and social barriers for disabled people. In turn, criticism of the social model as either unrealistic and/or unable to be validated by empirical research also called for consideration of a new model.

Considering the context of impairment, Imrie and Hall (2001) also suggest a new model should be considered and note that *'impairment is usually collapsed into a series of general and chaotic categories, such as vision, mobility and hard-of-hearing, which do little to reveal the complexities of impairment. Indeed, impairment is neither fixed nor static, or confined to any particular part of the population. It can be temporary or permanent, debilitating or not; in short, it is a contingent condition dependent on circumstances'* (ibid, 2001; 35).

The revised WHO classification moved towards a 'synthesis' of the medical and social models to become a biopsychosocial model, *'to develop an understanding of the interrelationships between biology, and social values*

and attitudes' (Imrie & Hall, 2001). The biopsychosocial perspective attempts to recognise the complexity of impairment, that it is not fixed or static and that it can be contextual and dependent on circumstances, especially those presented by the built environment. The model developed by the ICF and incorporated by the biopsychosocial model of disability starts with the health condition and recognises three levels of human functioning including body (and incorporating mental functioning), activities and participation (Barnes & Mercer, 2010). It also considers contextual factors which includes the environment and personal factors (figure 10).

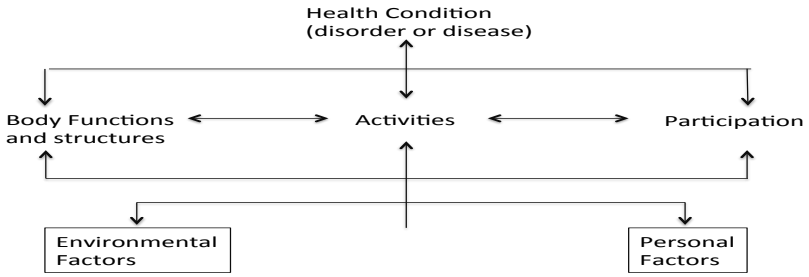

Figure 10. Interaction between components of ICF (Barnes & Mercer 2010 from WHO 2001)

Although over 1 million people in the UK are registered blind or partially sighted, they do not all share exactly the same experience biologically *and* socially of their impairment. Hence, there is no singular form of *'building or design response that can cater to the multiplicity of needs of vision impaired, or other, impaired people'* (Imrie and Hall, 2001:35).

Critics of the biopsychosocial model argue that it incorporates a taxonomy that is Western based and therefore 'scientific' in approach. Whilst this provides a framework to structure data on disability it does not contribute to wider social action or further understanding of disability (Barnes & Mercer, 2010). However, the biopsychosocial approach has generated discussion, and has been engaged within Nordic countries as a 'relational' approach which views disability as *'situational rather then an always present essence of*

the person' (Tossebro, 2004 in Barnes & Mercer, 2010:40). This focus on the situational encompasses wider consideration of the built environment and can be seen to be more of a human-ecological approach rather then just echoing the social model. Nordic critiques of the social model as widely adopted in the UK argue that it '*overestimates what can be accomplished by environmental changes' especially when considering the needs of people with severe cognitive disabilities'* (Barnes & Mercer, 2010:40)[14].

The bio-social model offers a more holistic and richer framework to address the issue of multiple disability, and therefore presents a more challenging issue for design. In addition, it moves beyond tailored responses and single-issue disability interventions currently being addressed in the design of products and environments. As such the bio-social model can be seen a more sustainable approach to designing for people with reduced mobility *'as it requires a more complete understanding of the circumstances under which products and environments are experienced as disabling'* (Hanson 2004), and will ensure that the resulting designs are more accessible to the majority of users over their life course.

2.3.4. Environmental Gerontology

In 2005 the House of Lords Science and Technology Committee reported: *Environment can have a powerful enabling or disabling impacts on older age… unsupportive environments (poor transport, poor housing, higher levels of crime etc) discourage active lifestyle and social participation. Indeed disability can be defined not as a physical state that exists without reference to other factors but as a mismatch between what a person can do and what their environment requires of them* (Ageing: Scientific Aspects: 1st Report, 2005:53). The growth of the ageing population and the need to support complex issues of the ageing *and* disabled body requires an understanding in

[14] It should be noted that the biopsychosocial model has been adopted to re-evaluate areas of disability policy towards assessing people's ability to work. This has resulted in withdrawing social and financial support to many people with disabilities, and therefore many within the disabled community have rejected the model.

which the environment that people live their lives, namely the built environment of urban areas, matters and is taken into full consideration when considering the wider health, wellbeing, economic and social prosperity of older and disabled people. Yet, Dankl (2011) has highlighted how the study of ageing, especially in the field of gerontology has focused on a positivist model, often reflecting the biomedical-model of disability, that of physical deficiency and decline (Bichard *et al*, 2007).

Environmental gerontologist Lawton (1986) argues for the rights of the ageing population, stating; *The vulnerability of this age group makes compelling the search for ways of elevating behaviours and experiencing quality of life through environmental means. By this line of reasoning, if we could design … neighbourhoods with more enriching resources… we could improve the level of functioning for many older people more then proportionately* (Ibid,1986;15).

Just as disability is not a singular experience shared between all those who consider themselves and are considered disabled, such is the experience of ageing. People aged 60 years old will share completely different experiences of their ageing bodies, with some being fit healthy and active, whilst others experiencing ill health and impairments, that share more in common with octogenarians. The relationship between ageing and impairment is also 'highly gendered', with women living longer then men and spending a greater proportion of their lives with impairment (Priestley, 2004).

Similarly to the 'relational' Nordic model of disability, environmental gerontology calls for a person-environment fit. Smith (2009) proposes that this should include considerations of 'comfort, management and distress' to understand the experiences of the ageing body and of older people ageing within urban environments.

Lawton (1975) uses the term 'environmental pressure' to describe how the poor design of the built environment from the domestic private space to the

public space of the street and its supporting buildings can have a detrimental effect on the lives of older people. For Lawton environmental pressure builds when having to negotiate an environment built for a body template of younger and fitter people. Such barriers may wear down older people in that they become vulnerable, docile and more accepting of the constraints placed on them by the environment. Lawton notes that small interventions within the built environment to decrease environmental pressure can have wider benefits for older people, enabling them to access wider amenities and therefore improve health prospects. Hanson (2004) suggests that the same proposition would also apply to disabled people.

2.4. The Body in Populations

As a representative of bodies that will eventually inhabit and use the outcomes of architectural and built environment designs, the architectural templates can be seen to promote users as mostly masculine in form and fully able in function. Yet, in light of the previous section that presented the ageing and disabled body, it must be questioned if such a template truly represents the populations they are designed for.

2.4.1. The UK Population [15]

The World Bank (2008) estimated the size of the UK population to be 61,399,118 people. Further breakdowns by the Office of National Statistics (ONS) (2008) estimated that children under 16 represented approximately one in five of the total population. This equaled the same proportion of people who are of retirement age (60 years for women and 65 years for men), and it was noted by Travis (2008) that this was the first time that the older population had equaled that of the younger. It was also noted that the average age of the population was 39 years, up from 37 years a decade earlier.

[15] Although these populations projections are now supplemented by data from the UK 2010 census, as stated in the preceding chapter, these figures represent the 'ethnographic present' and are relevant to the discussion within the time frame in which this research with informants took place.

The breakdown of the ageing population between men and women remained fairly equal up to the age of around 70. From the age of 71, women began to outnumber men. This not only reflected the higher life expectancy of women at older ages, but also echoed the higher male mortality rate during the Second World War. At 62 per cent, the majority of the population is represented by people of working age (aged 16 to 64 for males and 16 to 59 for females).

2.4.2. The Ageing UK Population[16]

The ONS (2011) has stated, in short, that 'the population of the UK is ageing'. Analysis of population figures spanning the last 25 years shows that the percentage of the population aged 65 and over has increased from 15 per cent in 1983 to 16 per cent in 2008, or approximately 9,824,000 people in total. However, during the same period, and as a result of falling birth rates, the percentage of the population aged 16 and under decreased from 21 per cent to 19 per cent, and despite the small 'baby boom' of 2003 onwards, the decrease in the younger age groups is seen as a trend that will continue. ONS future forecasts estimate that, by 2033, there will be significantly more people aged 65 and older (23%) whilst those aged 16 or younger will only account for 18 per cent of the population.

Amongst this ageing population, the fastest increase has been amongst those termed 'the oldest old' aged 85 and over. The recorded UK population of 1983 estimated that those aged 85 and over numbered 600,000. By 2008, this number had more then doubled to 1.3 million. Further ONS forecasting estimates that by 2033 there will be 3.2 million people in the 'oldest old' age sector, and that they will account for 5 per cent of the total population.

[16] It is of note that the detail of populations projections is constantly in flux as new data emerges. A current example of this flux can be considered in the birth rate projections, which has been found to be currently rising faster then had been envisaged, partly due to immigration. This can only serve as a guide to what can be expected, although the figures are based on people who are currently alive, their life trajectories may change over time.

2.4.3. Health and disability of the UK population

The increased life expectancy will also result in a rise of the median age of the UK population, which is expected to increase from 39 to 40 by 2033. Advances in medicine and health awareness are also predicted to increase life expectancy. This can be illustrated by considering how cancer is becoming less of a “death sentence”. Current estimates state that whilst one in three people will develop cancer at some point in their life, only one in four will die of it. The most common cancer is breast cancer, reported in 31 per cent of cases amongst women, followed by prostate cancer, reported in 25 per cent of cases amongst men (ONS, 2012). The majority of people who develop cancer are older, with only a quarter of cases reported in people under 60. After breast and prostate cancer, colorectal and bladder cancer are the fourth and fifth most diagnosed instances of the disease (figure 11). There is a higher survival rate for the majority of cancers amongst women then men, and cancer diagnosis is now considered to be synonymous with living with a chronic health condition and so it is covered by the legislation of the Disability Discrimination Act (2004).

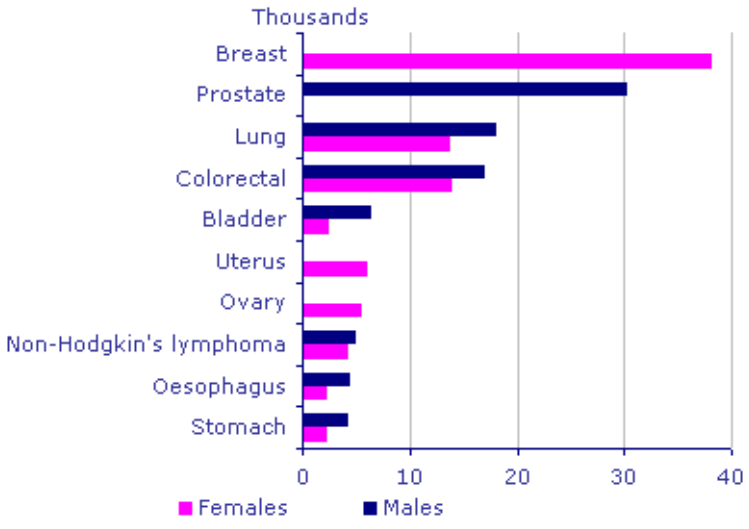

Figure 11. Incidence of the major cancers, England 2007 (ONS 2012)

The Department of Education and Employment (DfEE) has estimated that there are over 6.5 million people with long-term disabilities, or chronic health

concerns. Many people become disabled as part of the ageing process (loss of sight, hearing, mobility, dexterity and chronic illness such as cancers), and as such, the proportion of disabled people will increase with the ageing population. Interestingly, the recording of disabled people is not collected by the Department of Health, but by the DfEE and McColgan (2005) notes that people with disabilities account for one fifth of the working-age population of 37.82 million people (ONS, 2012). Thus, it can be suggested that disability is framed in economic and productive terms and not in health terms. The population data also suggests that the normative templates used in design do not accurately represent current populations, and will also not represent future populations who are ageing and will eventually be predominately female. In design, the normative figures as representative of the population body reflect a universal type and standard that denies body diversity and difference (Imrie and Hall, 2001).

2.5. What the body means for designers and architects

> Interviewer: ``*When you think of the body you seek to design for, what sort of body is that?"*
>
> Respondent: ``*You mean a human body?"*
>
> Interviewer*: ``Yes."*
>
> Respondent: ``*That is an obscure question. Gosh."*
>
> From; *Architects conceptions of the human body* (Imrie 2003:55).

The above exchange, highlighted by Imrie (2003) shows how considering the realities of the human body (differing abilities, gender, size) are not uppermost in the minds of architects, who instead often design for a body template or norm, based on measurements laid out in handbooks and manuals such as the *Metric Handbook* (Adler, 1999). Even when the disabled body is considered, it is one that that incorporates a wheelchair (figure 12)*,* and therefore reduces disability to *'a singular form of mobility impairment'* (Imrie

and Hall, 2001:10).

The influence of modernism in design theory and practice is considered to be one of the major influences on design (ibid, 2001). The focus on an abstract engineering aesthetic promoted a rational approach to design in which the normalised fully functional male body represented the homogenous public and was in turn the most rational model to design for (ibid, 2001). Bodies that did not fit this model were not included within the modernist design aesthetic and the modernist approach effectively estranged buildings from their users, creating a culture and practice in architecture and interior design that focused on the building form and wider visual art aesthetic rather in contrast to the function and user experience of the building (ibid, 2001).

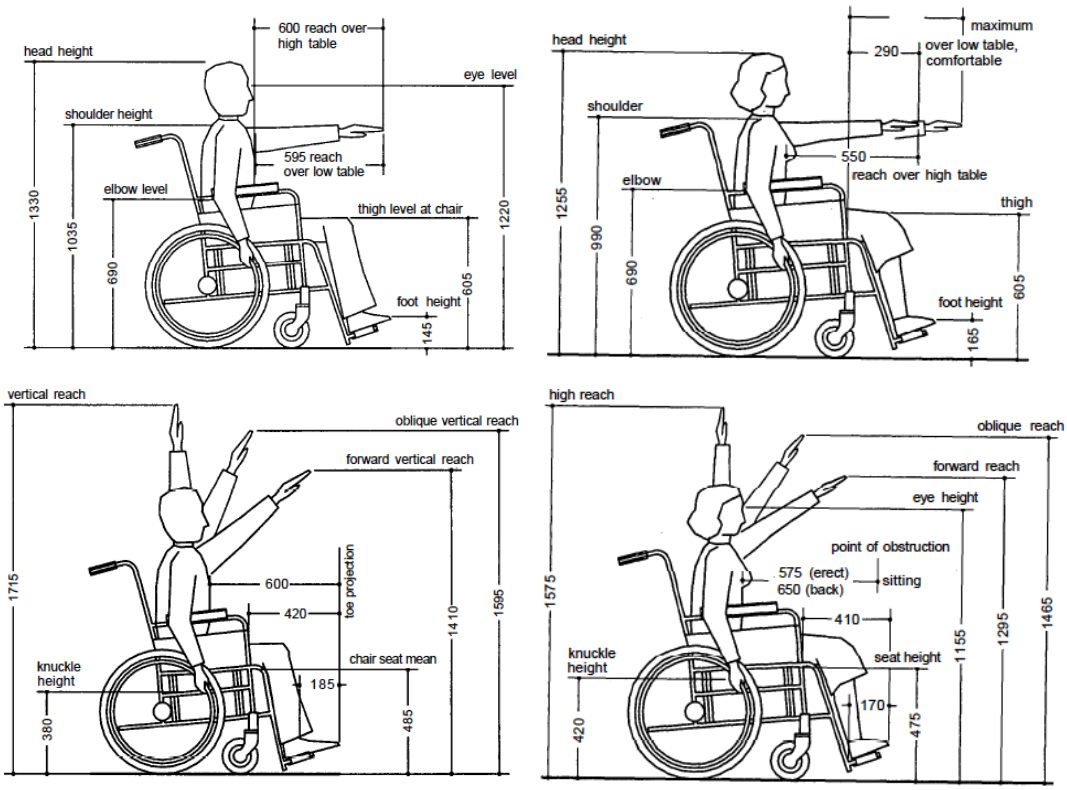

Figure 12. Dimensions of adult male and female wheelchair users from Adler (1999) pg.2:9-2:10.

The rise of ‘social architecture’ in which the multiplicity of user needs are recognised, challenged the modernist ideal to consider the body in design and therefore ‘re-centre the human subject’ (ibid, 2001). Modernism reflected ‘architectural disability’ (Goldsmith,1997) with the design, layout and

constructions of the built environment, creating hazardous spaces that are inconvenient, uncomfortable and unsafe, and for some a complete barrier that prevents access altogether. 'Architectural disability' can be conceived as a result of environmental pressure as introduced above and should not be applied just to new buildings, but also used to describe buildings that are poorly maintained or badly converted. Disability activists argue that environmental pressure also limits inclusion and participation in wider public life that includes education and employment opportunities. These barriers can also be extended to the growing ageing population who also face physical, sensory and cognitive barriers that prevent extended employment or new employment opportunities (Myerson et al, 2010).

Wylde et al (1994) suggest that almost 90% of people may experience architectural disability at some point in their life. A young fit male for whom the current design template represents the norm may find himself challenged by stairs after breaking a leg. Able-bodied adults who care for children or other adults share such environmental pressures, on a daily basis. Hanson (2004) surmises that *'almost everyone experiences problems in using the built environment at some time in their lives*' adding *'we are all potential or actual victims of architectural discrimination as a result of conventional building design'* (ibid, 2004:8).

Hanson (2004) notes how the medical and social models of disability and the idea of architectural disability and environmental pressure have not been widely accepted in architectural discussion, and found a distinction in design between 'general needs' and 'special needs' as a contributing factor (Hanson, 2002). Designing for 'general needs' assumed that the buildings end user would be the young, fit, active, educated, middle class and a predominately male body template. Designing for 'special needs' focused on the users of building who did not conform to the general needs template, including children, older people, people with disabilities and women. Hanson sees this division emanating from the medical model of disability, that throughout the twentieth century seemed a pragmatic approach to solving practical problems,

and generated products and environments tailored to meet a particular groups specific needs. By focusing on *'physical needs not civil rights many design solutions were unattractive and expensive add-ons, and considered stigmatising and patronising'* (Hanson, 2002:11).

2.6. Inclusive Design

Recognising that design can be disabling, a number of design movements and approaches have been developed to address access concerns, as well as countering the stigmatising and patronising results. Charting the history of Inclusive Design in the United Kingdom, Coleman *et al* (2003) describe how Inclusive Design has developed as a response to the twentieth century's design for mass production where products, services and environments were designed for a 'universal type'. Influenced by Henry Dreyfuss' (1960) *Measure of Man*, anthropometrics became the guide to function in design. Dreyfuss' thesis was based on a calculated average measurement taken from hundreds of men, women and children and led to a 'one size fits all' approach. Those who did not 'measure up' would be sidelined and in effect ostracised from accessing products, services and environments designed for 'average' or 'normal' people. The impact of the Measure of Man was profound, and influenced all aspects of design including homes, public buildings and space, workplaces, transport, furniture and appliances (Myerson, 2005).

By the early 1960's a backlash was gaining momentum against Dreyfuss' prescribed averages. In the UK, architect Selwyn Goldsmith published *Designing for the Disabled* (1963), which introduced comprehensive guidelines for building design to encompass the needs of people with disabilities. Initially, Goldsmith's research and recommendations focused on housing design for people with restricted mobility. By 1976, 'Designing for the Disabled' was in its third edition and now included disabled people's requirements with respect to public buildings. This specifically identified access to toilet facilities, and included some of the first user-centred research to be undertaken on disabled people's experiences of access to provision. Goldsmith's work would go on to be developed into the first British Standards

(1967 British Standard Code of Practice CP96 Access for the Disabled to Buildings) and Building Regulations that directly addressed the needs of access.

In the United States, two design approaches would surface to influence Inclusive Design. In 1971 Victor Papanek published Design for the Real World, which called for designers to be socially responsible and therefore went against the dominant market approach of mass produced design. In 1983 Robert Sommer published ‘Social design: Creating buildings with people in mind’. Sommer proposed that Social Design worked with people rather than for them and offered a holistic perspective that people would be involved not only in the planning and design of a building but also in the building’s subsequent management. Hanson (2004) observes that social design implies that there is at least a partial surrender of the role of the designer as expert, in favour of a more participatory approach that directly focuses on the users of design.

In 1989 Ron Mace set up the Centre for Universal Design at North Carolina State University. The centre developed the Universal Design paradigm, which set seven design principles to act as a matrix by which the designs of products, services and environments could be judged (table 2).

No.	Principle	Description
1	Equitable use	The design is useful and marketable to people with a range of abilities.
2	Flexible in use	The design accommodates a wide range of individual preferences and abilities.
3	Simple & Intuitive	Use of the design is easy to understand, regardless of user experience, knowledge, language skill or concentration level.
4	Perceptible information	Design communicates necessary information effectively to the user, regardless of ambient conditions or users' sensory abilities.
5	Tolerance for error	Design minimizes hazards and the adverse consequences of accidental or unintended actions.
6	Low physical effort	Design can be used efficiently and effectively with a minimum of fatigue.
7	Size and space for approach and use	Appropriate size and space is provided for approach, reach, manipulation and use regardless of a user's body size, posture or mobility.

Table 2: Principles for Universal Design (Centre for Universal Design, Hanson, 2004)

Universal Design promoted that by following these principles; products, services and environments would become more accessible and therefore alleviate discrimination against people with disabilities. Yet a Universal Design approach also strives to achieve a 'one-size-fits-all' solution which, when considering the scope of peoples' needs and abilities, would be impossible to achieve, and therefore negates the reality that there will always be a percentage of the population that will be excluded (Hanson, 2004).

2.6.1. Users as expert clients

In 2005, the management of Inclusive Design in the UK was captured by the formation of the British Standard BS 7000-6:2005. The standard defined the process as *'the design of mainstream products and/or services that are accessible to, and useable by, as many people as is reasonably possible… without the need for special adaptation or specialised design'* (British Standards Institute, 2005). Inclusive design has been used to develop products, services and built environments. It has become a popular method to develop design innovations in these areas, that can be used by all but that especially meets the aspirations of older and/or disabled people. A central tenet of inclusive design emphasises that by working with 'extreme users' (older and/or disabled people) as expert clients, the needs of the most challenged members of the population will be considered in the design

process (Coleman, 1994) and through doing so, the resulting solutions will better serve the majority of the population.

2.6.2. Extending the case for inclusive design

It is generally accepted that concepts such as the medical, social and biopsychosocial models of disability describe aspects of people's experiences with design. Terms such as environmental pressure and architecturally disabled are also agreed to be relevant, especially when talking about people's experiences within the built environment.

Whilst design for special needs has in many cases catered to access for disabled people, it has done so founded from the medical model and vision of disability and in a purely functional and arguably patronising way. Often the resulting design solutions have continued to stigmatise the disabled body as 'abnormal' and the passive recipient of 'special needs'. Many design outcomes have been 'added on' at increased cost not only financially but also to the overall appearance and functionality of the environment. In contrast a move towards inclusive design in which people are consulted and have voice in the design illustrates the desire of people to also choose aesthetics in line with function, and if used at the planning stage can avoid the cost of rectifying mistakes (Imrie & Hall, 2001). Hanson (2004) has charted (table 3) how the move from special needs to inclusive design also reflects a move towards a more general inclusive perspective.

Special Needs	**Inclusive Design**
Designer Client. Persona of a young, fit, active, male, white adult. The yardstick for good design.	People are individuals, who have different needs and requirements during their life course.
Others- older people and people with disabilities are not 'normal' clients.	Us- we all have goals/aspirations as well as problems and impairments.
They have 'special needs.'	We share 'generic needs'.
Micro-environmental approach.	Macro-environmental approach
Ethos of specialisation and pragmatism.	Ethos of normalization and enablement.
Tailors the environment so that it is 'just right' for each client group.	Extends parameters of design until no-one is excluded.
Telling people what they need.	Asking people what they want
Does your disability prevent you from accessing the city?	What is it about the design of the city centre that prevents you from using it?

Table 3. From 'special needs' to 'inclusive design' (Hanson 2004)

2.6.3. Design for a minority?

Although it may be easier to remove architectural and communication barriers than wider social and economic barriers to education, work and wider opportunities, it is important that creating an accessible environment reduces social exclusion (Shakespeare, 2006). Poor design can be a powerful symbolic message that highlights that it is indeed the design that disables, and is therefore not the response of the individual who encounters the design (ibid, 2006).

For many people, access to a number of products, services and environments is restricted or denied completely due to design. When such restrictions are recognised there is a tendency to focus on the individual's physical, sensory or cognitive restrictions as opposed to assessing what it is about a product, service or environment that prevents access. In reducing issues of access to the individual level there is a tendency to see any resulting barriers as a problem that only affects a minority of people.

In contrast to DfEE estimates outlined above, figures from the 2011 census of Great Britain estimated that there are 11 million people living with a limiting long-term illness, impairment or disability, the majority of which report impairments of mobility, lifting and carrying. The census also reported that disability is prevalent with age reporting that 6% of children, 16% of working age adults and 45% of adults over pension age are disabled. A third of the disabled population reported difficulty accessing public, commercial and leisure goods and services (Department for Work & Pensions, (2014). These figures demonstrate that a large section of the population currently experiences difficulties gaining access to many products, services and environments and suggest, with an ageing demographic, that an even greater proportion will do so in the not too distant future. Therefore, current perceptions of inclusive design as 'specialised' or for minority groups of the population can be considered misguided.

Inclusive design aims to reach beyond being just a 'technical response to need' (Imrie & Hall, 2005). Yet this is not to say that inclusive design ignores those whose needs may require more detailed interventions. Instead an inclusive approach, which considers the needs of 'extreme' users, may offer a normative intervention that increases the visibility of disability but with design responses that are less outstanding and 'special'. Moving beyond the social model and encompassing a biopsychosocial model within inclusive design also recognises the dynamic nature of the body, namely that it ages and that disabled people age too. Many 'inclusive' responses have been tailored to the young, fit and male wheelchair user and continue a static perspective of design as well as disability. Further consideration within the inclusive design process should be given towards the aspirational drives of users' wider cultural complexities; these include designing to encompass a person's faith or cultural conventions as well. Many older and disabled people continue to 'work around' faith and cultural observances that cannot be practiced with comfort and ease. Given that faith plays an important role in many people's lives such cultural aspects should also be considered. Indeed, by exploring through inclusive design such cultural experiences perhaps the normalisation of difference will extend beyond the body.

2.7. Conclusion

This chapter places emphasis on the body to introduce the thesis' shift from the environment as a focus of study. The body as subject has been prevalent in critical theory, especially techniques of managing the body and its place in the development of the city (Foucault, 1977). Yet consideration of the body (beyond one represented by gender) has been noticeably missing in architectural discourse. The information age, has seen the body in architectural study become digitalised and re-imagined as an 'agent' (Penn and Turner, 2001) that moves in spatial representations, unimpeded by the diversity of bodily structures in a landscape described as 'accessible' (Hillier & Iida, 2005). To counter the digital agent, Borden (2001) brings the flesh and

bone body back to the lived space of the city and draws attention to the experience of the body in accessing, using and subverting space beyond the function it has been designed for.

The exclusion of the body in architectural design can be seen from a historical perspective with the development of the architectural template and the ideal body to design for. Here the body is able, proportioned and male, and carries itself through the architect's training and into professional practice (Imrie, 2003), despite not being a true representative of the population body. Instead the design template represents a singular phase of the body's development that can be interrupted at any times by life events as well as the ongoing biological process of ageing.

Attempts at addressing the need of bodies that are not represented by the architectural templates, have focused on the physical limitations and the design of the built environment. Medical and social models of disability, each of which excludes important aspects of the other, have framed design that attempts to redress the diversity of the body, but both are now recognised as limiting (Shakespeare, 2006). A new model that recognises the complexity of the body and the limitations of the environment (physically, socially, economically and politically), presents a biosocial perspective and suggests new challenges for designers to move beyond the functional design outputs based on the environment and the body's 'fit' within it. The biosocial model of disability may also liberate the concept of disability from its equally static singular perspective as commonly represented in design and wider society by the International Symbol of Access (ISA). This singular representation negates the fact that disabled bodies are also ageing bodies, and will, through medical interventions and chronic illness survival, be prevalent in greater numbers in the population.

However, a modernist ideal of the body, despite numbers to contradict its assumed prevalence, continues to dominate design and can be seen to have

filtered down to representations of the disabled body, seated in a wheelchair, to be designed for. These representations continue to exert environmental pressure that, as will be shown, extends to wider sections of the population, and follows a ‘special needs’ outcome that stigmatises and patronises the user (Hanson, 2002). Inclusive design has attempted to address such design by involving users in the design process, albeit within the social model of disability and at expense of the of the reality of bodily difference (Imrie and Hall, 2001; Hanson, 2004), and its varied experiences of accessing the city.

3. The Experiencing Body

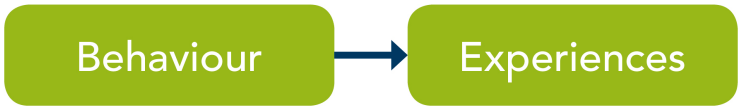

Figure 13. The shift from behaviour to experience

3.1. The context of experience

The previous chapter presented how the body is represented by a normative architectural template, which even when considering the disabled body, offers a singular perspective that does not reflect the diversity of the body in the population. This chapter continues the focus on the body through an overview of design and policy literature within the context of toilet provision that explores the experience of the body in the use of the toilet, itself an aid to avoid dealing with a private and unmentionable bodily function, particularly in western society, and of bodies designated as 'different'.

The chapter will begin with a discussion on the experiencing body and how the biological needs are considered in design. Discussion will then turn to the variation of designs in the public and private (domestic) arenas. This thesis is concerned with the former but there is muted reference to the domestic toilet throughout, as it is often the toilet at home that becomes the baseline against which public sanitation is 'measured'. This is also reflected in much of the literature on sanitation, which inevitably refers to the toilet in the home. Most notable of this work is that produced by Alexander Kira (1966,1976) who focused detailed ergonomic studies on the use of the domestic bathroom, but was to also consider the design challenges of the public toilet as well.

Despite Mary Douglas' pivotal (1966) work *Purity and Danger* on pollution avoidance, the issue of our relationship (personal, social and cultural) to toileting has not been avidly discussed in the field of social anthropology and very few studies have been made around the bodily experience of excretion

within architecture and its associated rituals and practices. A notable exception is the work of Sjaak van der Geest (2002;2008;2014), whose studies have been directed to the ethnographic context of Ghana. In contrast, no identifiable work has been found in a Western context, despite dramatic changes in social attitudes over the centuries and in the ethnographic records of human culture.

In comparison, the history of sanitation has been well documented tracing the shift from open to managed excretion. Most noted is Dominic LaPorte's *'History of Shit'* (1978), which frames the management of excreta in early modern France as mirroring the rise of the state and its associated technologies of population administration. The overriding narrative has been one of the need to manage bodies of a healthy population, and can be suggested to follow a 'medical model'. Consideration of public sanitation provision from a material culture perspective has been strikingly absent despite Plaskow's (2009) observation that; *'issues surrounding toilets are located at the intersection of the inescapable materiality of the human body and the ways in which the body's demands are culturally and symbolically elaborated in relation to multiple social hierarchies'* (Ibid, 2009:vii).

3.2 Considerations of Space for Excretion

In considering the designated space for excretion, the thesis will now give an an overview of literature that contributes to wider academic discourse on the issues of toilet design, both publicly available and those within the domestic environment. This literature informs the thesis, although focuses on issues of gender and space consideration from an architectural history perspective. The literature highlights the tension, both socially and cultural that resides in the space of the publicly accessible lavatory.

3.2.1. Public toilets and gender

In 2009, Gershenson & Penner published '*Ladies and Gents: Public Toilets and Gender*' a collection of essays that primarily focused on the issue of the

gendered space division within the provision of most public toilets in western industrialised societies, mostly the United States, the United Kingdom and Australia. The last section of the book also presented artistic provocations around the gendered division of this space. In the books forward, Plaskow (2009), in reference to study on toilets stated 'it is striking how relatively little academic or public discussion has been devoted to the subject'. This lack of academic interest, was also echoed by George (2008) in her book *The Big Necessity.* Although the '*Ladies and Gents…*'editors would counter these academic oversights citing a 'small and growing body of work' on toilets, they posit that such work tends to focus on sexual identity.

Edelman (1996) in a discussion on men's public toilet provision proposes that this space is 'a technical response to the hygienic concerns associated with body necessities' (ibid, 1996:152). Whilst Edelman was focused on the design of male provision, the meaning can also be ascribed to the space of the women's bathroom, one that is often designed by architects with a fixed view of the body as discussed in chapter two and with very little consultation amongst the eventual users of this space. Edelman continues that 'the design of the men's room, simply put, has palpable designs on men; it aspires, that is, to design them'. Such aspirations may also be extended to women and disabled people.

Penner (1996) in regards to '*The Ladies Roo*m' suggests that;

> *'the design has remained largely unchanged for over a century: a fact which suggests that the problem lies not with a level of awareness, but with the way the issue is entangled with deeply rooted social attitudes and is prioritized in official discourse' (ibid, 1996:2).*

Plumbing: sounding modern architecture was published in 1997 and edited by Lahiji and Friedman. This collection of essays followed Hal Foster's '*Return of the Real*', which called for art theory to return to the physicality of peoples' bodily experiences, and social sites in which they take place, creating a new

'space for heeding the materiality of objects, the interaction between these and the body, and the necessary reinvention of the subject as the ultimate reference to legitimize architectural schemes' (de Sola-Morales:1997:4). The writings in the edited volume explored the history of the bathroom in the domestic space (Frascari,1997), Alfred Loo's turn of the 20th century article on the role of plumbing in modern society, as well as detailed discussions of amenities around the toilet (if the focus on the toilet is the WC pan) such as the sink, and its dual representation in coupling with the WC pan in such enclosed space of both clean and unclean (Lahiji and Friedman, 2007). Although domestically focused these essays highlight the complex relationship between people and the disposal of their bodily wastes, and how this complexity is read within architectural theory.

In 2002, the discussions on toilets within the academic media extended beyond architectural critique. The Institute of Postcolonial Studies published 'The Toilet Issue' of their journal *Postcolonial Studies*. Essays included a discussion on toilets in modernity, proposing that in conjunction with modernity's project of transparency, especially in architecture, the toilet remains in the 'bowels of the building…like an internal organ it can not be done without, but neither can it be seen' (Dutton *et al,* 2002;138). Seven essays presented global perspectives in toileting, including the Japanese led design innovation in toilets with the development of Toto's washlet WC pan (Chun, 2002) and pit latrines and the role of the night soil collector in Ghana (van der Geest, 2002). An essay entitled 'The Plumbing of modern life' (Morgan, 2002) proclaimed 'the toilet is the icon of the twentieth century' (ibid,2002:171) and echoes Claire Loos, the wife of Alfred Loo's that by looking at the *'grand signifier of twentieth century modernism, that white porcelain bowl of the toilet… a lot can be learned about a culture from looking at their bathrooms and toilets'* (Loos cited in ibid, 2002:171). Most of this work focused on the iconic nature of the WC pan as representing the toilet, and mostly from the perspective of domestic space in contrast to the gendered space of public toilets.

Skeggs (2001) paper *The Toilet Paper: Feminity, class and mis-recognition* focused on tensions that erupt in women's public toilets when notions of femininity are mis-read and women maybe mistaken as being the wrong gender to inhabit this specific public space. The issue of ascribed gender roles and subsequence 'gender performance' (Butler, 1990) within the space of the public bathroom was researched by Cavanagh (2010) in her book *Queering Bathrooms: Gender, Sexuality and the Hygienic Imagination*. Cavanagh's ethnographic study of North American (principally Canadian) 'public' bathrooms suggests that their gendered design, based on the binarism of male and female, can be considered an instrument of heteronormativity in wider public space. Incorporating Butler's 'Gender Trouble', a Lacanian perspective of the psychoanalytic *mirror stage* and a critique of Irigaray's 'sexed architecture' through Rawes (2007), Cavanagh presents the experiences of people whose self identification is based outside of normative sex / gender structures, and describes their sometimes frightening experiences in 'public' bathrooms when they are believed to be in the 'wrong space' by other users (see Bichard, 2012 for an extended discussion on Cavanagh's work).

The issue of heteronormative influences through the space assignments of public toilets were explored by Barcan (2005) in *Dirty Spaces: Communication and Contamination in Men's Public Toilets.* This study explored how men's public toilet's can be seen as sites of heteronormative masculinity. Barcan's work provides an interesting perspective in the gender-focused approach as she is a women researching the men's public toilet, a space which is socially prescribed and denied to her.

In addition to the co-edited volume *Ladies and Gents*, Penner has published numerous articles on the place of women's toilets in social life, from a historical perspective in *A World of Unmentionable Suffering: Women's Public Conveniences in Victorian London*, (Ibid, 2001), to the development of female urinals (*Female Urinals: Taking a stan*d, 2001), and more recently a

consideration of the body as a 'generator of interior space' in '*Redesigning for the Body: Users and Bathrooms*' (2013). This later essay considers the work of Alexander Kira's study '*The Bathroom: Criteria for Design*' as overviewed in the thesis.

The historical record for the building of public toilets has been explored by case study in Camden, London (Penner, 2001). Such archival research has been replicated by Brunton (2005) in '*Evil Necessaries and abominable Erections: Public Conveniences and Private Interests in the Scottish City, 1830-1870'* which detailed the sanitary reform campaigns in Edinburgh, Glasgow, Aberdeen and Leith. Cooper *et al* (2000) in their essay '*Rooms of Their Own: public toilets and gendered citizens in a New Zealand city 1860-1940'* explore similar themes of the tension between public decency in relation to gender segregation, and public hygiene in the history of urban space and sanitation.

As a site for initial exploration within academic research, a number of excellent Masters thesis have emerged that focus on the issue of public toilets. The aforementioned '*The Ladies' Room A Historical and Cultural Analysis of Women's Lavatories in London'* was submitted by Penner as an Architectural MSc Report in 1996 and later developed into a radio broadcast and peer reviewed journal paper *(A world of Unmentionable suffering, 2001)*. In 2005 Kwon submitted '*Public Toilets in New York City: A Plan Flushed With Success?*' towards her MSc in Urban Planning. Kwon's thesis focused on the use of public toilets in New York including those operated by private companies such as coffee chains, and identified that the majority of users of such 'private' public provision tended to be able bodied and Caucasian (ibid, 2005). Posing the question 'is there adequate public toilet provision in New York City?' Kwon concluded that through her user research, over half of those consulted thought current provision inadequate, especially in regards to

accessibility[1]. Kwon's work provides an illustrative example of how general access has not increased within US provision, given that is predominately provided by the 'private' sector, a model of provision the UK seems set to mirror.

From a design perspective, Knight's 2006 thesis '*The Public Toilet: A Woman's Place Designing Privacy into a Public Facility*' submitted for the MA(RCA) in Industrial Design Engineering, focused on the design of public toilets in London, Europe's only megacity serving a population of over 13 million people and a world renowned tourist centre. Knights research focused on the issue of privacy within the design of the facility and stemmed from her design work in the development of SatLav, a toilet information service in which by texting a number the nearest toilet to your location is texted back to you. SatLav went on to be incorporated by Westminster Council and was cited as a possible provision information solution by the Department of Local Communities in their guide to improving public toilet provision (*Improving Public Access to Better Quality Toilet Facilities, 2008)*. Knights work would provide the background to the development of The Great British Public Toilet Map (Bichard and Ramster *(nee Knight)*, 2012).

The aforementioned works offer architectural, design and planning critiques on toilets and their cultural significance within disciplines, not only in the West, but also from a historical and non-western perspective. The majority of the work cited above is desk based research (with the exception of Kwon), and as such does not directly engage with users experiences of publicly accessible toilet design.

[1] Interestingly Kwon's thesis used the bid by New York for the 2012 Olympic games as a backdrop for her research in an attempt to identify that there was a discrepancy between the infrastructure to support the event and visitor attendance. Similar concerns were also raised by Hanson (2006) in regards to London's successful bid to host 2012 Olympic games.

3.3. Experiencing excretion

Within this population body of the 'the public' comprising all ages, abilities, cultural backgrounds and belief systems, there exists the commonality of the body's need to excrete. Urination and defecation are biological processes of the digestive and urinary systems and the process of excretion eliminates body waste from both food (liquid and solid) as well biological products such as bacteria.

Estimates as to how many times a day a person needs to urinate and defecate vary. It is generally thought that a healthy body will need to urinate between six to eight times a day, and not have to do so during periods of sleep (considered to be 6-8 hours during the night). Unusual patterns of urination are considered when the need to void occurs more frequently than every 2 hours. Increased urinary frequency is often considered symptomatic of a number of normal and abnormal conditions including:

- Urinary Tract Infection (UTI) and Cystitis
- Prostatitis (infected or inflamed prostate gland)
- Enlarged prostate
- Pregnancy
- Menstrual cycle
- Radiotherapy
- Diabetes
- Bladder dysfunction
- Bladder cancer

Frequent urination can also be a side effect of medication, especially diuretics given for the treatment of conditions such as chronic or acute heart failure. The biological process of ageing often results in the need to urinate more frequently, as the loss of elasticity in the bladder can reduce the capacity to store urine by up to 50 per cent, resulting in the need to urinate more frequently but also find lavatories more efficiently (Bichard *et al*, 2012).

The need to defecate is harder to quantify. Wymen *et al* (1978) found that colonic function varies due to biological variations, as well as periodic lifestyle interruptions such as travel and stress. Longstreth (1993) proposed that the frequency of bowel movements increased in older men, with this pattern not repeated in older women. Zutshi *et al* (2007) in a study of female bowel function observed *'we do not know what is normal'* (ibid 2007:351). Many studies have focused on the perceived abnormalities of women's bowel function such as Irritable Bowel Syndrome (IBS), considered to be more prevalent in women, as well as fecal incontinence and the effects of hysterectomy and hormone replacement therapy. Zutshi *et al*'s study of 489 women aged from 18-80, reported that 5 per cent recorded one bowel function per day, yet 49 per cent reported less (from 3-6 times a week). Frequency changes were noted in women of menstrual age, whilst women of menopausal age reported no changes. 30 per cent of women who had children recorded fecal incontinence, and 40 per cent of women reported changes in bowel function after pregnancy. The study concluded that the focus on perceived abnormalities of women's bowel function may need to be re-examined as, if there is no clear baseline of 'normal', it can be argued that *'one daily bowel movement for women is not the norm'* (ibid, 2007:357).
The lack of knowledge concerning female bowel function was found to be similar in epidemiological studies of Urinary Incontinence (UI). Due to a number of variations in definition, severity and reporting time span, together with subjective perceptions of being incontinent (from a 'little wetness' to 'complete loss of bladder contents'), assessing the prevalence of UI has been hard to define (Hunskaar *et al*, 2000). It is recognised that urinary incontinence is twice as prevalent in women as in men, and key risk factors in both sexes include:

- Functional impairment impeding the ability to reach lavatories
- Cognitive impairment
- Obesity

Risk factors are extended in women through:

- Pregnancy

- Childbirth
- Menopause
- Hysterectomy

and extended in men through prostatectomy.

The increased need to use the toilet has been identified as Overactive Bladder (OAB), and Abrams (2000) has reported that OAB can severely restrict people's quality of life, dictating where people go due to availability of public toilets and the lack of toilet provision actively reducing the opportunity to leave home. Abrams found that the restriction in social and physical activity amongst people with OAB resulted in a lower quality of life than patients with diabetes, and amongst women with OAB, the study found that 1% were absent from work due to their need to use toilets more frequently.

To meet the need for the body to experience excretion, especially outside of the home, there is a requirement for toileting facilities to be provided. This has been addressed through the design of a designated space of the lavatory, and will now be considered, albeit based from a North American perspective, through the work of US researcher Alexander Kira's comprehensive ergonomic study of the bathroom.

3.4. The Bathroom

In 1966 Alexander Kira published the first ergonomic study of bathroom use including elimination using the WC pan and the urinal. Based on user-centred research undertaken at Cornell's Centre for Housing and Environmental Studies, *The Bathroom* presented a holistic account of the use of the domestic toilet, shower and bath that incorporated social and cultural perspectives as well as psychological and physical approaches. The ergonomic perspectives of urination and defecation were considered groundbreaking at the time, as were Kira's ecological concerns of water saving. The research has yet to be replicated within a context that would include bodies of physical difference and/or cultural practice towards toileting. The Bathroom was re-issued in 1976

and included an extended chapter on the provision of public toilet facilities, including the design for domestic toilet provision that addressed the needs of the disabled and ageing population.

Kira framed the development of public toilet provision as directly related to the history of urbanization, public health and its relation to sanitation. Acknowledging that responses to the needs of the body have varied in time and space, history and culture, the needs of the body have never changed. Kira describes a public facility as one; *'that is provided in the interest of public convenience, sanitation and health in a communal location by, or on behalf of a communal agency for use by anyone with need. Needs in this situation, may arise from one or two circumstances. First being away from ones own facilities – being 'caught short'. Second, not having facilities of ones own'* (ibid, 1976:194).

Kira conceives the urban environment as one comprising 'specialists' who are commonly away from home and work in specific places, and market centres in which large numbers of people are travelling. In considering the history of public conveniences he sees a connection between their development and the development of public transport in the twentieth century. Recognising the car-driven culture of suburban United States, the work acknowledges that the introduction of the public convenience was predominately to meet the needs of the pedestrian, and that such reliance on cars has contributed to the decline in provision within North America. Acknowledging the rise in provision within businesses, Kira proposes that the poor maintenance of 'municipal' facilities has increased the preference and use of business based provision amongst users. This suggestion was affirmed by Hanson *et al* (2007) street surveys of 301 people within the UK context, who found that 89% preferred to use 'private' provision (identified as toilets operated by businesses) opposed to facilities operated by the local authority.

3.4.1. The social and psychological aspects of public facilities

Considering the social and psychological aspects of public facilities Kira argues that general negative attitudes to public toilets extends to a wider aesthetic of acceptable and unacceptable design, with many aspects of the public toilet not found in the domestic bathroom (the open fronted WC seat and the urinal). Such aesthetic preference also extends to the colour of the WC seat, with black being the preference for public toilet environments but actively rejected in the domestic sphere.

Considering 'publicness', Kira notes several factors that define a public toilet facility including:

- The degree of others from oneself
- The extent of usage
- The level of cleanliness and maintenance

Citing a number of forms of provision, the research suggests a blur in the distinction between strictly public and private provision that includes facilities in:

- Hotels that whilst public become temporarily private.
- Places of work, which become neutral (neither public nor private) due to familiarity.
- Favorite restaurants and department stores which also become neutral.

The most prominent psychological barrier concerns 'stranger danger' with the stranger being microbe based, but that this is also compounded by the complexity of our own feeling towards body waste and the process of elimination and generates a temporary sense of ownership or 'mine' when using the space of the public toilet, especially the cubicle (ibid,1976). It is also an illusion that can be shattered on seeing someone else's waste. Such 'territory privacy violations' become operable *'because of general social taboos against discussing, watching or acknowledging elimination functions' leads users to 'mutually screen and ignore each other'* (ibid,1976:202).

Kira considers how the provision of toilets can be extended to project an 'image of the host' that being the provider of the facilities. In this instance the user, as a member of the public, is a guest and their experience of provision can leave them with a lasting impression. It is within this encounter that the perceptions of hygiene and maintenance standards are most important. Facilities with large footfalls that are not adequately cleaned and maintained will be shunned. In contrast, businesses with exceptional provision are talked about and even visited just to see the toilets. Writing in 1976, Kira recalls the Four Seasons restaurant in Manhattan as an example of such highly valued toilet provision. At time of writing this thesis a similar 'word of mouth' recommendation on provision emerged for London restaurant Sketch (Hyman, 2011). Kira acknowledges that not all businesses wish to place emphasis or value their toilet provision suggesting that 'restrooms are seen as non-productive in terms of space utilization and investment' (ibid,1976;212).

3.4.2. Planning and design criteria for public facilities

In the section on planning and design criteria for public facilities, Kira proposes that there is not one kind of public toilet, and identifies different forms of provision based on degrees of 'publicness', ascribing facilities as:

- Some highly public
- Some virtually private
- Some sequential
- Some simultaneous use
- Some carefully controlled access
- Some provide highly visible management

However, despite having different degrees of publicness all toilet provision shares the common problems of; location, identification, maintenance, supervision and vandalism (ibid,1976;216). This thesis suggests that access to the facility itself and the provision therein should also be considered a shared common problem. Through suggesting degrees of publicness, Kira

then organizes various types of public toilet provision into contextual categories. These, as shown in table 4 are:

Contextual Category	Publicness
Transient facilites	Totally Public
Temporary facilites	Totally Public
Institutional facilites	Totally Public
Work and retail facilties	Semi-public
Mobile facilites	Semi-public
Lodging facilties	Semi-public

Table 4. Contextual categories and degree of publicness after Kira (1976)

Given these contextual issues, design criteria should be based on 'transient' facilities as Kira considers these to be the most extreme example of where design can alleviate problems associated with high use. Users of 'transient' public facilities are seen to have key attributes including; they will often be in a hurry (due to being en-route somewhere), will have more items of clothing (especially in a US East Coast winter with coats, hats and gloves), and will most likely be carrying bags and/or luggage. The analysis of use and subsequent design recommendations are based on differences in male and female needs and use of the facilities. Considering men's provision he notes that the average time spent in these 'transient' type public toilets is less then 2 minutes and that only 60% of male users washed their hands after using the facilities.

The identification of heavy use public toilet provision as 'transient' now frames the thesis' consideration of wider city space and the use of the urban environment by the experiencing body.

3.5. City Provision

The built environment presents some of the greatest challenges in breaking down barriers that impede disabled peoples' access (Hanson, 2002). Although some city space may be considered accessible, the wider urban environments' topography has created spaces of physical inaccessibility and subsequently produced social exclusion for the disabled body. Imrie notes

that dividing the city by who can and who cannot access its space generates 'distinctive spatialities of demarcation and exclusion' (ibid, 2001; 232). The amalgamation of the city's physical design, institutional policies and mobility systems have thus far prevented people with disabilities from participating in areas of urban social life, often taken for granted by the able bodied, and in effect have set apart abled from disabled. Segregation by physical access creates an urban environment that has been defined by some authors as 'enclosed', 'barriered' and 'bounded', and a 'space of exclusion' for many in the population (Gleeson, 2001; Imrie, 2001). Kitchin and Law (2001) consider disabled people in particular to have their movement and mobility circumscribed by their limited access, leading to a specific and selective use of cities based on such infrastructure limitations, predominantly the availability of accessible public toilets. Not only does the lack of physical access deny disabled people the use of city space, but in doing so, actively discourages them from participating in the economic and social life of the city. Built for and by the able body, the city displays unsympathetic design characteristics by only allowing access by that same body, and becoming a space in which only segments of the population can enter, move within and enjoy. Further consideration concerning the demographics of the urban landscape reveals that the exclusion of older and disabled people generates a lack of variety in the cities' communities, and creates an imbalance of the city's population (Hanson, 2002). Without diversity the city becomes homogenous, a situation that Stein (1976) warns can turn modern cities into 'dinosaur cities'.

3.5.1. Barriers to Access

One factor that explains why many disabled people do not live in city centres may be its lack of physical access, yet other factors also shape the city's population. The lack of affordable and accessible housing as well as the boom in the housing market, especially in the South East effectively excludes not only disabled people but also the key workers on whom they may be dependent on for support (Hanson, 2002). Living in areas on the margins of the city necessitates not only journeys to the centre in order to take up work

and education prospects, but also to see the latest plays, film releases and musical performances, and to experience the pubs and clubs and the many other leisure facilities the centre has to offer. Equally, people who spend time traveling between work locations and those working in supporting services such as deliveries etc, need access to suitable and available toilet facilities en route (Greed, 2003).

Traveling to the city presents the first hurdle of many faced by people with mobility impairments. Atkins (2001) reports that access and accessibility is a complex problem encompassing not only the consideration of physical aspects of the built environment but also more subtle factors. A lack of dropped kerbs, uneven, rough or broken paving surfaces, narrow and cluttered paths may all contribute to the environment's physical barriers that impede access. In addition, a lack of information on accessible alternatives, inappropriate operating practices, and lack of, or unhelpful staff can also be considered barriers to access.

Gleeson (2001) suggests that an assumption held by public transport providers towards service users is that they often share a 'generic level of ambulance'. Thus the lack of access to public transport proves a key barrier when disabled people consider journeys to city centres. People, whose mobility is impaired to the degree that they cannot drive private vehicles, rely heavily on public transport to fulfill social and domestic needs such as visiting family and friends and doing the weekly shopping. This also holds for older people, many of whom who may have had to give up driving[2] (Barker et al 1995; Atkins, 2001). Ensuring there is access to public transport creates opportunities for people, especially those with disabilities, to increase their mobility, enabling them to access key services, and also to gain more independence in their lives. Atkins (2001) provides an interesting argument based on central government budgets with regards to accessible public

2 Atkins (2001) records that 77% of men and 55% of women over age 55 had to give up driving due to health concerns (pp. 2-3)

transport. Reporting that wider mobility increases perceived quality of life, Atkins notes that previous psychological research recorded that mobility deprivation is a key factor in low morale, increased depression and loneliness. As such, the possible health problems caused by the environment's inaccessible features further drew on the resources of local health authorities and social services.

It was perceived by central government that problems concerning barriers to access in the built environment would be addressed and overcome with the provisions set out in the Part 3 of the 1995 Disability Discrimination Act (DDA). Implementing the act should create a more accessible built environment and begin to diminish the social exclusion of people with disabilities, but this has depended on how the Act continues to be interpreted.

Bennett (1990) and Imrie (1996) have noted that regulations in policy are often poorly enforced by the responsible authorities, consequently full implementation of the DDA, may require a number of court actions to be taken. Goldsmith (1997) noted that 'reasonable provision' might result in changes to access being 'tacked' onto a building. Gleeson (2001) adds that poor implementation coupled with a lack of performance evaluation of made 'improvements' may lead to 'a deeper sense of cynicism' and subsequent 'political exclusion' amongst the people the legislation was intended to help. Without careful consideration of the changes made to barriers to access within the built environment, the selectivity and discrimination towards disabled people's mobility will continue (Goldsmith, 1997).

Yet, despite the danger of the continuing barriers, the literature agrees that creating access for disabled people will see the built environment become more accessible for many others. Changes enabling access to public buildings, cafés, shops and leisure facilities will also benefit an increasing aging population, as well as parents with babies and young children, and

those with temporary mobility problems. In short ‘an accessible environment will benefit all’ (Oxley, 2002).

3.5.2. Barriers to Work

In 2002 the Office of National Statistics (ONS) reported that approximately half of the UK’s disabled population were economically inactive. Factors affecting disabled people’s desire to work include the severity of their disability, but also access to (and within) potential workplaces, and the potential negative attitudes and discrimination they may face. In 2003, the employment rate amongst working age disabled adults was 48%, a significant difference to the rate of 81% amongst those considered able. A number of policy directives have been implemented to help and encourage disabled people into the workforce; these include tax credits, New Deals and the DDA. Yet in many ways these policies do not consider the broader aspects of working life. Most people spend a large proportion of their lives working and as a result many social networks are formed around the work environment.

Encouraging disabled people to enter the labour market aids financial independence but also presents opportunities for them to extend social networks. However, without changes in the wider built environment, people with mobility impairments, whilst being able to work, may still experience social exclusion. The charity Is There An Accessible Loo (ITAAL) noted a wheelchair user’s concerns when considering the social aspect of work:

> *I never went to the pub after work, or joined in work socials; there was never an accessible loo available [and] I did not have the courage to suggest they found somewhere I could join in as a wheelchair user.*
>
> (ITAAL 2001).

Introduced in 1999, Part 2 of the DDA legislation aimed to counter discrimination in the employment of disabled people; it also made employers aware of their duty to make adjustments in the physical environment of the work place to allow access for disabled employees. With the provisions set

out in Part 3 to create a more accessible physical environment, employment opportunities for disabled people should increase. However, a substantial hurdle remains in the future implementation of Part 5 of the legislation covering access to public transport, especially access provisions to rail vehicles. Department for Transport analysis of the current and future rail vehicle stock revealed that suitable access to all rail vehicles would be achieved by 2025. Given that provisions for accessing train stations would be in place by 2004, this has lead to anecdotes that disabled people would be able to access a station in 2004 but will have to wait until 2025 for a train[3]. In many ways this sketch encompasses a perceived setback in the DDA legislation, in that whilst the legislation encourages and provides for employment access, the wider built environment involving the transport infrastructure has, due to the huge economic cost, not been provided for. Hence, although disabled people may be offered employment and be able to access work environments, they may not be able to access an area where the employment is located, especially if it is situated in a city centre. As many people are based in the city's peripheral areas, access to work requires public transport. For people with disabilities, their choice of public transport is limited, and almost denied in inner city rail and underground rail provision.

The growing ageing population may also be concerned about access to transport for employment needs. Government policy, set out by the Department for Work and Pensions[4], highlighted how initiatives such as Age Positive campaigns, Age Discrimination legislation and state pension schemes to encourage people to stay in work longer, aimed at creating an age friendly work environment. An inaccessible built environment and transport system may make the prospect of an extended working life unattractive, especially amongst older women and people of ethnicity who may also experience security concerns as well.

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3 Comment made at MIT workshop group presentation 10/12/03

4 http://www.dwp.gov.uk/policy/ageing-society/strategy-and-publications/opportunity-age-first-report/volume-1/age-and-the-workforce/

In February 2003, the then London Mayor Ken Livingston introduced the Congestion Charge. The area covered by the charge included central London and was extended to include areas of West London in February 2007. The initial charge was £5 per day to enter the charge zone, and as of 2010 this has risen to £8 per day. People with disabilities and their carers who are registered as blue badge holders are exempt from paying the congestion charge but are required to register with Transport for London and pay a £10 administration fee.

Bonsall & Kelly (2005) argue that vulnerable groups such as people with disabilities, older people, women and ethnic communities may have low incomes and therefore have difficulty paying the charge. In addition, a lack of access to public transport through concerns of access, cost and security can trigger social exclusion by denying access to larger social networks. Bonsall & Kelly (2005) note that current transport policy appears to reflect two contrasting and conflicting ideologies. Firstly, there is an increased emphasis on the rights and needs of vulnerable groups, through measures promoting social inclusion such as disability and age discrimination legislation. Secondly, there is the need to manage the demand for travel, through initiatives such as the congestion charge. Hence, a situation is created whereby those in vulnerable groups who may depend on car use to counter the current shortfalls in public transport may be excluded through schemes to manage car use in city centres.

3.5.3. Time Constraints

Hesketh (2002) notes that most disabled people require extra planning and preparation time in making journeys. This use of time is not necessarily due to a person's impairment, but because many travel providers require advance notice of travel plans. With a large proportion of older and disabled people relying on public transport, especially the bus (Atkins, 2001), a journey time including time spent for journey planning may be considerably increased. ITAAL has commented that this use of time in making enquiries can become

'frustrating' as well as costly in telephone calls and the correspondence required for 'advance notice of travel plans'. However, further consideration of disabled people's time also reveals a secondary deliberation.

Langan (2001) argues that transport provisions have been socially stratified for disabled people. Taking into account that the majority of accessible transport options available to disabled and older people are limited to the use of buses (Atkins 2001), this effectively segregates them from other transport systems. Bus systems comprise many more points of access and departure, but confine travelers to journeys on fixed routes and a service that runs at irregular intervals, and that produces, especially in areas outside of the city, unknowable waiting times. In the hierarchy of transport systems, buses are also a slow form of transportation, and are 'generally framed as the poorest relation' (ibid, 2001:475). In making wider provisions for only one form of accessible transport, and the supporting built environment in time for the DDA's 2004 deadline, the bus became the main travel option to access the city for employment, education and leisure opportunities the act legislates for. The provision, in effect of a single and slow transport option, not only discriminates against users with disabilities but also targets a group that often needs extra time to negotiate barriers when undertaking activities of daily living.

3.5.4. The Transport Chain

For a person with mobility impairments, a potential journey from a peripheral home to the city centre may include too many barriers to be considered, with further barriers to be encountered once the city centre is reached. And as Hesketh (2002) argues very few of the 'links' in the transport chain are truly accessible, and consequently many journeys for mobility impaired people fail.

3.5.4.1. The Pedestrian Environment

Pavement use in the journey from the home to the transport stop and then from the stop to the final destination, is most likely to be the first and last link

in the transport chain, and barriers within this environment may cause a break in the chain. As mentioned, some barriers at this point may even deter journey from the home in the first place. A person with osteo-arthritis commented, 'I have to be careful where I put my feet. I walk along an apparently flat pavement and there's one paving stone sticking out and that's it'. Another respondent commented that the disintegrating state of pavements meant they 'spend their life looking down' and consequently miss seeing people go by (cited by Atkins, 2001). The Department of Environment Transport and the Regions' report 'Encouraging Walking' (2000) estimated that 20% of footways in England and Wales were neglected and in need of repair. The conditions in the pedestrian environment that present barriers to movement for people with mobility impairments include uneven paving, broken paving slabs and hazardous surfaces (Atkins, 2001). For wheelchair users, the lack of dropped kerbs, steep gradients and narrow or congested paths can make journeys difficult (Oxley, 2002). Undefined street furniture including Automatic Public Conveniences (APCs), posts, bollards, litter bins and street signs can cause injury through collision for visually impaired people (ibid, 2002), whilst the placing of these items coupled with additional barriers such as refuse awaiting collection and bumper to bumper car parking can turn the pavement into the equivalent of an assault course to manoeuvre around for wheelchair users and those with other mobility aids.

Street works can also become extremely dangerous if not properly safeguarded. Oxley recommends barriers that are rigid so that they cannot be easily knocked over, and with temporary footpaths following guidelines on height, width and gradient of permanent accessible pavements. The area around street works should be adequately illuminated at night for pedestrians as well as vehicles. Oxley also suggests that audible warnings should be used to alert visually impaired pedestrians of possible dangers. Design innovations in paving, using contrasting and 'information surfaces', enable visually impaired people to navigate the pedestrian environment. However, such tactile paving, whilst providing mobility to one section of the population, may

contribute to barriers that cause problems for people with other forms of impairment. Arthritis Care (2003) has called for a reconsideration of the design of tactile paving, as the uneven surfaces can cause discomfort for people with muscular-skeletal conditions. In addition, a woman with double amputations below the knees commented on the difficulty she experienced using pedestrian crossing with textured paving[5]. Conversely, dropped kerbs that aid road crossing for wheelchair users, can be hazardous to people with visual impairments who use sharp kerbs to detect the edges of pavements (Ungar *et al*, 1997).

Atkins (2001) reports that street crossings can also hinder mobility, with research indicating that many users find the time allocated for crossing too short. It has been estimated that nearly half of pedestrian fatalities occur in the age range 60 and over (ibid, 2001). Figures for possible fatalities to disabled people in the pedestrian environment were not available, although fear of accidents has been recorded by Atkins as a contributing factor for older people and people with disabilities, especially those with visual impairments. Feelings of fear and personal insecurity in the built environment can also contribute as a barrier to mobility, and whilst these feelings may exaggerate the reality of the situation, it is these perceptions that shape travel decisions, and result in people becoming afraid to leave their homes (Atkins, 2001).

One respondent in Atkins report noted that a major barrier to access was that the infrastructure was not there: 'no seats, no toilets' (ibid; 4-9). In another section of the report a lack of toilets is referred to as a difficulty 'accessing ancillary features' (ibid; 3-8), although no mention is made of accessing these sites in the qualitative data. In sum, although commented on by respondents, no conclusion that recommended more accessible toilet provision was

[5] Conversation with Gill Hicks OBE at Audi Design Federation 'Sustain Our Nation' Event (2010).

reached, although a recommendation for more seating was put forward (ibid; 7-2).

The 1980's saw detailed research covering walking distances and fatigue experienced by a range of people with mobility considerations, and recommended seating at appropriate intervals. Data from research suggested wheelchair users and those with visual impairments traveled 150 meters without a need to rest. Those who had mobility impairment but who did not use a walking aid, could travel on foot a distance of 100 meters, whilst those whose mobility was helped with a walking aid, such as a walking stick, needed to rest every 50 meters (Oxley 2002). Research by the ONS (2003), revealed that 69% of people with mobility impairments used a walking stick, whilst 9% used other walking aids (such as crutches, walking frames, and tripods). Hence, a lack of seating situated at appropriate intervals can also act as a barrier, especially at transport termini. It has been recommended that seating be placed at interval distances of 50 meters within the pedestrian environment (Oxley, 2002). Additionally, seating provides increased surveillance therefore contributes to crime reduction whilst increasing feelings of safety and security within the built environment (Greed, 2003).

Oxley (2002) suggests further considerations should be made to the width of pedestrian areas designed for disabled people to comfortably move around in. The minimum width for comfortable mobility ranges from 750mm for a person who uses one cane, to 1500mm for a wheelchair user and ambulant person side-by-side. These requirements have been met in many city centre pedestrian areas. However, in areas of historic importance these recommendations are hard to implement due to heritage and preservation concerns.

3.5.4.2. Attitudes

A less obvious barrier to access for people with mobility impairments is the attitudes held by wider (able) members of society, which can create a

psychological barrier and continue social exclusion. Hahn (1986) argues that attitudes based on stereotypes of the disabled person as 'helpless' create a subtle yet pervasive form of prejudice that is reflected in the lack of access within the built environment and consequent exclusion of disabled people from public space. Stereotypes may be constructed from a sense of fear of the disabled body as symbolic of the body's general vulnerability, but also from an 'aesthetic' aversion where the disabled body does not conform to other culturally constructed stereotypes of normality (ibid).

Ungar (1997) urges a view of disability to be taken from a social perspective, where disability is created from the social and environmental barriers that impede access, and as such disability is socio-cultural phenomenon. Indeed, Unger suggests that 'society actually creates the thing it fears', and that the removal of the physical barriers should also begin to remove the negative stereotypes and consequent attitudes that persist in society towards people with impairments.

Atkins (2001) notes that the attitudes of transport operators and staff can deter people from using services and therefore accessing areas further from home. Through a literature review Atkins found a common thread consisting of a lack of awareness of the needs of people with mobility impairments. Consequently Atkins calls for training to raise awareness in two areas; firstly by considering the obstacles in the built environment that disabled people are faced with and, secondly addressing existing attitudes that may also discriminate.

3.6. Age Friendly Cities

The importance of access to the built environment in the city centre is also emphasised in guidelines published by the World Health Organisation in 2007. 'Global Age Friendly Cities: A Guide' (WHO, 2007) was based on research with 1485 older people and their carers in 33 cities and 22

countries[6]. The guide sets out the need for age friendly cities in the light of two key global trends, namely the increasing global ageing population and the growth of the world's cities, in terms of size and population numbers. In 2007 it was estimated that half of the global population lives in cities. The course of the twentieth city saw the mega city, with a population over 10 million, increase from two to twenty. The WHO estimate that by 2030 3 out of 5 people in the world will live in a city (WHO, 2007).

To counter the perspective of older people as the recipients of care, Age Friendly Cities promotes the ageing population as a resource that should be actively encouraged to engage in social life. Based on an Active Ageing framework, the guide presents a holistic approach to ageing through the life course, in which:

> *Active ageing depends on a variety of influences or determinants that surround individuals, families and nations. They include material conditions as well as social factors that affect individual types of behaviour and feelings. All of these factors, and the interaction between them, play an important role in affecting how well individuals age. Many aspects of urban settings and services reflect these determinants and are included in the characteristic features of an age-friendly city.*
>
> WHO Global Age Friendly Cities: A Guide (2007) pg 5

Cities are considered the centres of cultural, social and political activity, as well as 'hothouses' of innovation in products and services. The WHO guide argues that vibrant cities benefit a country's entire population but stresses that for cities to successfully support these populations; they need to be sustainable in terms of structure and services to support well-being and productivity. Older people especially, require an enabling environment for the physical and social changes they encounter. In short, making cities age

[6] The countries involved included; Jordan, Mexico, Ireland, Switzerland, Canada, Japan, Pakistan, Turkey, Jamaica, Argentina, United Kingdom, Puerto Rico, Australia, Russia, Kenya, India, Brazil, Germany, Costa Rica, China, Lebanon and Italy.

friendly is considered a logical and necessary response to promote the contributions of an ageing population and ensure that cities thrive.

The policies, services and structure that enable people to actively age include factors that:

- Recognising the wide range of capabilities and resources amongst older people
- Anticipate and respond flexibly to ageing and related needs and preferences.
- Respect people's decisions and life long choices
- Protect those who are most vulnerable
- Promote inclusion and contributions to all areas of community life.

In addition the WHO guide lists eight key aspects to the age friendly city: transport, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, community support and health services, outdoor spaces and buildings[7].

3.6.1. Transport

Access to transport including the accessibility of transport vehicles and the affordability of using public transport is considered a key aspect of the age friendly city. Being able to use public transport with ease gives people a sense of independence, especially older people who may no longer drive. The WHO guide identified the ability to be able to move around for social and civic participation was important for feelings of well being as well as being able to access wider community and health services.

The WHO identified 15 points for age friendly transportation, which include:

- The affordability of transport and consistency in fares and charges

[7] The WHO guide was listed as a major reference in the Labour Governments Department of Communities and Local Government 'Lifetime Homes Lifetime Neighbourhood's policy (2008), and is noticeable that it does not reference the provision of toilet facilities as a key aspect of neighbourhood development.

- Services are reliable and frequent including at night and weekends
- Services extend to key destinations and are well connected within transport interchanges.
- Vehicles are age friendly, clean and well maintained.
- Specialised services are in place for people with disabilities who cannot access other forms of public transport.
- Seating is prioritized for older people and is respected by passengers.
- Drivers receive adequate training in picking up and driving with older people on board.
- That transport is safe from crime and not overcrowded.
- Bus stops have shelters and seating, are clean, safe and well lit. Stations are accessible and conveniently located with accessible toilets, legible well-placed signage and courteous and helpful staff.
- Information is legible, clear and includes routes and access information and is in itself accessible.
- Community transport is available for specific events.
- Taxis are affordable, accessible, comfortable and with courteous drivers.
- Roads are maintained, with good lighting and well-designed traffic calming devices. Traffic lights and crossing areas are clearly marked and have consistent and well-placed signage. Roads are free from obstructions that may block a driver's vision and that the rules of the road are enforced.
- Driver competence is encouraged through refresher driving courses
- Parking is affordable with bays provided that are close to shops and transport stops, with priority parking for people with disabilities is carefully monitored.

In contrast to the model of a 'transport chain' promoted by the Disability Rights Task Force, the WHO promote the issue of transport from a vehicular perspective, in which walking is not perceived as a mode of transport, and

that toilet facilities appear as part of the station design opposed to the larger transport infrastructure.

3.6.2. Outdoor spaces & buildings

Within the aspect of outdoor spaces and buildings, the WHO recommend an 11 point checklist of features that have been identified as directly affecting the quality of life of older people and enabling their ability to age in place. These are:

- Ensuring the environment is clean with reasonable noise levels and no unpleasant and harmful odours
- That there are green spaces and walkways that are well maintained, safe and pedestrian friendly with places to sit and public toilets
- That public seating is provided in green spaces, transport stops, and regular intervals in the pedestrian environment.
- That pavements are well maintained, non-slip and wide enough to accommodate wheelchairs, with dropped kerbs and clear of obstructions.
- That roads have regularly spaced pedestrian crossings with, where appropriate, adequate crossing interventions such as traffic islands and underpasses, as well as adequate time at road crossings with visual and audible signals.
- That traffic rules are enforced and that drivers give way to pedestrians.
- That public safety is paramount with good policing, enforcement of by laws and support of community and personal safety initiatives.
- That walkways and cycle paths are separated (with public toilets on walkways)
- That buildings are age friendly (with accessible toilet facilities open to the public)
- That there are adequate public toilets, that well signed, clean and well maintained
- That important services remain in local areas that they are physically accessible with age-friendly customer service.

Within this framework, pavements are seen as part of outside space but not as part of the transport chain, and although drivers and cyclists are encouraged to give way to pedestrians these points are not presented as part of an integrated whole. Within this checklist the provision of public lavatory facilities is given greater emphasis with recommendations on where they should be placed (near walkways) that greater numbers should be accessible to members of the public (in buildings), and that there are simply more public toilet facilities. However, separating pedestrian movement from the wider transport infrastructure compartmentalises the issues, and in respect to the holistic approach to active ageing, demonstrates fragmented solutions.

3.7. London for the continent

In 2003, London Transport Users Committee published 'London for the continent'. This report made the direct link between the provision of public lavatory facilities as essential to the transport chain. Writing an Afterword the social historian Professor Eric Midwinter noted that in 1950 the average worker in the UK commuted 5 miles a day, by 2003 this has increased to 27 miles a day and was expected to rise to 56 miles by 2025. The report's own review of relevant policy documents concerning London's transport found that in *Best practice guidelines on intermodal interchange in London* there was only one reference to the provision of toilets and baby change facilities and that this was as an 'optional extra'. In Transport for London's plan for *Improving interchange in London*, there was no mention at all of toilet provision.

Surveying the provision of toilet facilities at transport interchanges in 2003, the report found that 22 % of interchanges had no toilet provision and a further 25% had toilets that were not in working order. In short, nearly half of London's transport interchanges had no adequate provision of toilets. Those stations that did offer facilities had them situated behind ticket barriers, effectively making them 'for customers only' and not available to the general public.

Comparing toilet provision for motorists with public transport providers, the report argues that road users are well served by petrol stations and motorway services, and that there is a clear commercial motivation in providing good toilet facilities. However, for public transport users, whose use of stations is obligatory, public transport providers do not share this commercial motivation to offer toilet facilities. The report states that in the promotion of public transport policy it should also be explained why users are so poorly served by toilet facilities, especially when compared to motorists who have the opportunity to find toilets when they need them.

The report *From Exclusion to Inclusion* by the Disability Rights Task Force (DRTF, 1999) stated that *'for all disabled people to be able to travel, and to travel with confidence, all aspects of the "transport chain" must be accessible'*. Using the metaphor of a chain for 'seamless' travel, the first link is made on a journey's start, when leaving home and walking to the stop/station of the chosen system of transport. The second link is added for waiting time, a third when boarding and leaving the transport system. Connecting to another transport system will provide another link in the chain, with the last link made in the final journey to the destination. Atkins (2001) suggests that thinking of a journey this way allows for the movement from A to B to be considered as a linked whole rather then as a set of discreet separate movements. Considering movement to the city in this way, the built environment presents many factors that impede access, of which a significant element maybe the lack of public toilet provision.

3.7.1. A Weak Link: Sustainable Toilet Provision

The transport chain suggests a linear movement, and reflects a 'one size fits all' model of thinking that does not take into account the flexibility of many people's lives and the ill-discipline of the body's need to excrete. The chain is also a metaphor for a restraint, an object that impedes freedom, especially the freedom to roam. The alternative metaphor of a leash – as in 'the bladder's

leash' (Kitchin and Law, 2001) is also used to tie disabled and older people to certain city spaces.

As Atkins (2001) noted 'a transport chain is only as strong as its weakest link' and suggests that *'designing and providing a transport chain that is accessible to mobility impaired customers will also benefit parents with young children, women, people from ethnic minorities and people living in rural areas, all users with similar needs'*. Although recognised by Kira (1976) as a space that will be used 'on route', Atkins' report does not directly reference the provision of accessible public toilets as one of the links within the transport chain and wider built environment.

Continence is now considered an impairment that affects a person's ability *'to carry out normal day to day activities'* (DDA, 2004) and thus legislation seeks to improve access for people who experience continence concerns. The lack of appropriate facilities continues to be a barrier experienced by those with concerns of continence management as well as older people and parents with babies and/or young children in accessing the built environment, especially city centres (Greed, 2003).

Yet the availability of public toilets show a decrease in the number of facilities available. No current estimates exist but in 2003 Greed estimated 40% of on-street toilets had closed in a decade (Greed,2003). Whilst not referenced within the transport chain, accessible toilet provision can be considered an essential link within this chain. Currently public toilets are provided in many bus stations, although provision on bus routes is negligible. Similarly most central railway stations have toilet provision, whilst smaller stations have had closed facilities (ibid,2003). There is little to no provision on London's Underground network, the lack of which has been cited as one of the principal barriers to accessing the Underground for older and mobility impaired people (Atkins, 2001). The poverty of suitable provision in the wider environment is considered a major concern for older and disabled people (Barker *et al*, 1995;

Kitchen & Law, 2001; Oxley,2002, Greed, 2003, Hanson *et al*, 2007) and there is no singular policy principally aimed at addressing these concerns. Instead policy, like the provision itself is fragmented between a number of departments (Greed, 2003).

Many of the city's employment, education and leisure facilities are inaccessible to all but the able-bodied, creating 'no-go' areas for many people. The DDA attempted to address this imbalance through 'reasonable adjustments' made to the built environment. Yet the legislations focus on physicality denotes a move towards the medical model of disability and continues to view the disabled body as one of 'abnormal' moving in a 'normal' environment. This perspective suggests that access consists of merely retrofitting existing public space, and amounts to no more than 'token gestures' (Hanson, 2002) towards improvement.

From a holistic perspective the implementation of the DDA can be perceived as operating in reverse. The introduction of safeguards to prevent discrimination to and in the work place has opened up more opportunities for people with disabilities to access employment. Legislation concerning wider access to the built environment came into effect in October 2004, but is reliant on case law. A further hurdle remains in traveling to areas of work, as full access to all forms of public transport is not expected until 2025. In the meantime transport options for disabled people are limited to mainly bus services, whose routes are not serviced by toilet provision. Estimates suggest that 70% of the adult population is affected by bladder problems (Incontact, 2003). Thus the provision of accessible public toilets should be considered essential to the seamless travel objectives of the transport chain.

The growth of cities combined with an ageing population will require the built environment to cater to the body's experiences. With people extending their working lives there will be more need to commute, coupled with rocketing city property prices, over longer distances. The increased travel time and distance

combined with an ageing population with weaker bladders, who are encouraged not to use the car through concern for environmental change, will generate a need to access more toilet provision. Currently there appears to be a stalemate as to who may be responsible for the increased provision, and suggestions include a number of approaches that incorporate central government, local government, communities and business (Knight and Bichard, 2011). Yet this continues the fragmented approach to provision Greed (2003) identifies as currently employed. Such an approach, in which there is no overall singular responsibility for service delivery will continue to offer a variety of solutions that are inconsistent in terms of design, quality and quantity.

Atkins (2001) argued that extending the transport chain beyond the systems of transportation should include areas such as urban planning and design. However, omitting a direct reference for facilities to meet excretion needs within a journey overlooks the necessity for provision within 'the transport chain', and effectively continues to obfuscate responsibility for provision between transport provider, government department and/or local authority.

3.7.2. Improving Public Access to Better Quality Toilets

In 2008, the New Labour government had begun to recognise the need for public toilet provision but stopped far short of any legislation to enforce provision. Instead, the Department of Communities and Local Government published a strategic guide to *Improving Public Access to Better Quality Toilet Facilities*. This guide was aimed at helping local authorities reconsider current local provision. The report begins with statements from a number of government ministers on the importance of public toilet facilities; these include representatives of The Department for Transport, Department for Children Schools and Families, Department of Health, Department for Work and Pensions, and the Department for Business, Enterprise and Regulatory Reform, and presents four key policy priorities in which the provision of public toilets play an important role. These include:

Social Equity and Inclusion - in which access to toilets is seen as essential for more vulnerable members of society who require more frequent access to lavatories.
Healthy Communities – in which access to toilets prevents street fouling and provision in parks and leisure areas can promote exercise and keep people physically active.
Cleaner, Safer, Greener Communities – identifies toilet facilities that are abandoned and uncared for can become sites for vandalism and anti-social behaviour. In addition, a lack of available facilities in the evening encourages street fouling and together, these issues can generate a cycle of decline in an area and actively contribute to more social problems, resulting in barriers to other policy priorities including social equity and inclusion (people become fearful of going out) and healthy communities (people avoid parks and areas for recreation and exercise).
Sustainable Transport- encouraging people out of cars and onto public transport or cycling and walking will not be successful if people cannot find toilet facilities within the wider built environment, especially at transport interchanges. The lack of toilets at these key points may also result in more street fouling and again impact on other policy areas mentioned previously.

It can be considered that it is not only the transport chain that maybe broken by the weak link of insufficient toilet provision, but that a lack of 'joined up thinking' in other areas of policy also generates disjointed provision. Although recognised as important in areas of mobility and wider health concerns by a number of government departments, there is no overall department in which the issue of public toilet provision is essentially part of its remit.

3.8. Public Convenience: A designated space for the excretory experience of the public body.

In 1992, the Audit Commission began to survey the number of public toilets as part of the 1992 Local Government Act and to meet the needs of the Citizen's Charter. By 1999 the British Toilet Association estimated from the Audit

Commission that there were there were approximately 10,000 toilets in the UK (Greed, 2003). However, the last decade has seen many public conveniences close due to a myriad of issues, such as cost cutting in Local Authority budgets, police recommendations due to criminal activity, and perceived conversion costs to make facilities more accessible under the terms of Part 3 of the DDA (2004). It is currently unknown how many public lavatories there are, but Valuation Office Agency Data from 2008 showed that provision in 2000 stood at 5410. By 2008, this number had fallen by 16 per cent to 4423. This means that currently, based on the World Bank's UK population estimate of 61,399,118 people there is one public lavatory for 13,882 members of the public.

Current British Standards for the provision of public toilets do not recommend how many facilities should be available at various population densities. However, BS6465 Part 4 (2010) does recommend that at least one toilet facility should be provided in low-density settlements of at least 5000 people (BS6465-4;17). If such a strategy were to be adopted on a national level irrespective of population density, there would be an approximate three-fold increase to over 12,000 public lavatories available[8].

A study on street urination carried out in 2004 by the Jill Dando Institute of Crime Science found that current evening provision of toilets was inadequate. Thomson *et al* (2004) used the British Standard BS6465 Part 1 (1996) recommendation for toilets in public buildings as a guideline for evening provision (table 5).

[8] The latest British Standard BS6465 Part 4 (2010) does include a complex equation for the calculation of the number of cubicles that should be available for a population. This equation includes an estimation of time spent in the area and time spent in the cubicle. Whilst it can be seen as a useful tool for providers to calculate where facilities' might be placed and how many cubicles might be needed, it is not relevant to this section of the discussion in which I am highlighting the need of more facilities' as a general need for the population.

	BS 6465 Provision for Males	BS6465 Provision for Females
WC	One for up to 250 men and then one for every 500 men or part thereof.	Two for up to 75 women, three for 76-150 women and then one for every additional 80 women or part thereof.
Urinals	Two for up to 100 men and then one for every additional 50 men or part thereof.	Not Applicable

Table 5. BS 6465 Requirement for toilets in Public Buildings (Thomson *et al*, 2004).

Thomson *et al* then calculated the average number of people who may leave nightclubs around the Leicester Square area of central London. They estimated that between 3.00-4.00 am approximately 12,000 people would emerge from clubs and bars in the area, and that were the toilet provision necessary to sustain this population be based on the British Standard guide, there would need to be 13 WC cubicles for men supplemented by 120 urinals, and 77 cubicles for women (table 6).

	BS 6465 Provision for 6,000 Males	BS6465 Provision for 6,000 Females
WC	13	77
Urinal	120	Not Applicable

Table 6. Estimated toilet provision between the hours of 3-4 am based on BS6465 (1996) provision guidance (Thomson *et al*, 2004).

Instead the study found that actual provision consisted of 5 WC cubicles for men, supplemented by 16 urinals and 6 WC cubicles for women (table 7).

	Actual Provision for Males	Actual Provision for Females
WC	5 (38% of BS 6465 's recommendation for 6,000 Males)	6 (8% of BS6465's recommendation for 6,000 Females
Urinal	16 (13% of BS6465's recommendation for 6,000 Males	Not Applicable

Table 7. Actual Toilet Provision in Leicester Square, London between the hours of 3-4 am (Thomson *et al*, 2004)

The lack of evening provision has been recognised as a major contribution to the problem of street urination and defecation. Although no definitive costs could be identified with addressing this issue specifically, it is estimated that English Local Authorities spend £340 million a year cleaning streets (Southwark Council, 2014), of which the products of excretion can be considered a contributory factor.

3.9. Excretory economics

Reeves *et al* (2006) has assessed the economic cost of Over Active Bladder and found that although not a condition of ageing, OAB is more frequent in older people, and is therefore likely to increase in countries with an ageing population. Reeves *et al* have divided costs into three categories, those of direct costs, indirect costs and intangible costs. Direct costs include managing OAB such as treating urinary tract infections and skin conditions arising from skin contact with urine. However, disturbed sleep through nocturia (the need to urinate throughout the night) as well as falls and fractures that may result from either trying to reach the lavatory in the dark or rushing to reach a lavatory, have also been included, as have costs related to the treatment of depression brought on by OAB. Indirect costs include the cost to society such as loss of work due to absenteeism, impaired performance at work and change in job status due to OAB. Lastly, intangible costs include those associated with diminished quality of life. Interestingly, the cost of building and maintaining public conveniences was not included in either indirect costs or as an element of reducing intangible costs. Reeves *et al* (2006) estimate that the total cost (direct, indirect and intangible) of OAB to the UK health budget in 2000 was over £700 million and that this would rise by 22 per cent by 2020, therefore increasing the economic burden of OAB (including conditions such as urinary incontinence), especially amongst older people. This may prove crucial when supporting the needs of an ageing population to keep healthy and active, as well as facilitating an increase the retirement age to counter budget crises in care and pensions.

3.10. A private solution to a public problem

To counter the shortfall in public toilet provision, many local authorities have entered into partnerships with businesses in Community Toilet Schemes (CTS), in which the local authority pay business to make their provision available to people beyond the customer base. CTS's have become a popular way for local authorities to address the shortfall in provision. However, such schemes effectively shift responsibility from the public sector to the private sector, following a trend observed with many aspects of social care and welfare.

CTS's and access to privately operated facilities (such as those found in supermarkets, department stores, fast food outlets, pubs and cafes etc.) do extend the perception of provision, but include safeguards for the proprietors including the right to refuse admission to toilets. Provision is also withdrawn when the business closes in the evening, creating a severe lack of facilities, especially in the city centre in which social activities that involve drinking and subsequent excretion may dramatically increase the need to use the toilet[9]. Hanson *et al* (2007) observed that many small businesses that joined Community Toilet Schemes, only offered standard provision, and therefore could be considered to contravene the DDA.

With the majority of toilet provision falling within the private domain, the link in the transport chain is effectively further weakened, especially for evening travel and for some areas that do not open on weekends. Toilet availability effectively follows a nine-to-five, Monday to Friday timetable, which does not mirror the wider uses of the city or the excretory experiences of the body. Where out of hours provision is met it is widely done so by the Automatic Public Convenience.

[9] This need has been addressed by some local authorities by the installation of permanent and temporary urinals. These however only meet the need of a small sector of the population excluding women, people with disabilities, older men who may feel self conscious urinating in public, and men who observe hygiene considerations of faith.

3.10.1. Automatic Public Convenience

The Automatic Public Convenience (APC) is a fully automated self-cleaning, single use cubicle that defines it self as street furniture opposed to a building structure. Under this definition, it does not need to follow the stringent guidelines as laid out in the British Standards or Building Regulations (to be discussed in chapter 4) and offers below minimum with regards to accessible design provision. Hanson *et al* (2007) found that in total 60% of 301survey respondents would not use an APC. A breakdown of those surveyed revealed that 64% of women and 78% of people over the age of 65 avoided such provision.

Greed (2003) identifies the APC as the principal design influence on an approach that favors a 'fortress' narrative over 'access'. APC's provide unisex provision and the rejection of these facilities, especially by women suggests that the fortress element of design is also not agreeable with users who may prefer a 'powder room' aesthetic.

3.11. Gendered excretion experience.

Gender identification as either a man or women plays a major role in the issue of public lavatories. The space of the public convenience is currently the last space to still be divided by sex. The issue of toilets has often been cited as a feminist issue, and it has been proposed that the discrepancy in provision can be considered sex discrimination (Greed, 2003, Anthony & Dufresne, 2009).

Greed (2003) argues that men, on average, have twice as much public lavatory provision as women as they will often have urinals as well as WC cubicles. This may be due to existing lavatory stock being built before 1996 when Approved Document G of the Building Regulations (1985) permitted the building of up to a third more sanitary facilities for men, by both matching the number of WC cubicles provided for women and adding extra male urinals (ibid, 2003). Provision could also be weighted to be more advantageous to men due to the architectural division of space for lavatories. A 50/50 division

of space will result in the same number of WC stalls but additional space can be taken up with urinals resulting in more provision for men then women. Greed (2003) suggests that as a minimum point of 'best practice' the ratio of provision should be 2:1 in favour of women. This suggests that if men are provided with 2 WC cubicles and 6 urinals, women should have at least 16 WC cubicles.

Current provision recommendations are based on 'equal' provision of 1:1. However, it has been noted that women often take longer to use toilets due to their need to sit down to excrete, as well as having to remove more items of clothing to do so, therefore exposing themselves and hence observing the social need to toilet in private. In short, the greater social constraints upon women (clothing, sitting and privacy) result in the need for women to have more toilet cubicles and also more physical space to accommodate that greater provision.

Current and future demographic trends may also strengthen the case for more provision to meet the needs of women. ONS figures state that the ratio between men and women is fairly constant at 1:1. However, as the population ages, there is a shift to a ratio of 2 women for every one man (2:1) by around the age of 89. Future forecasting suggests that by 2033 there will be an increase to 3.3 million of the 'oldest old' (aged 85 and over) of which over 2 million will be female.

As a disease that predominately affects older age groups, data on cancer survival rates suggest that women have a higher 5 year survival rate in most cancers that can be diagnosed in both sexes, except cancer of the bladder (46.8 per cent in women compared to 56.9 per cent in men). Surviving cancer, especially of the bladder or colon, may result in living with a stoma and using a colostomy or urostomy bag. MacMillan cancer care suggest that changing bags requires time and privacy, and thus access to toilet facilities when not at home can be considered to be crucial in maintaining an active life.

In the UK, it is currently considered 'normal' for men to stand when urinating. In an interview in *The Independent*, Tim Fletcher, a cancer survivor who had undergone a partial penectomy for penile cancer stated, 'We have to dictate where to go for a drink these days on whether they've got nice toilets'. Mr. Fletcher continued his interview by describing how he now had to use the toilet cubicle opposed to the urinal, adding that one of his reasons for beginning reconstructive penile surgery was 'I just want to stand up to have a pee!' This perception of standing to urinate as being 'normal' was echoed by Mr. Fletcher's consultant plastic surgeon, stated that the goal of the reconstructive surgery was 'to provide a functional reconstruction that allows the patient to pass urine normally…' (Dunn, 2010).

Yet standing to urinate can be considered more culturally specific than biologically determined. In many Asian countries, men squat to urinate as well as defecate. Many male followers of Islam prefer to sit down to urinate so as to prevent 'pollution' of clothes, and in Germany it is common practice for men to sit on the WC pan to urinate. Currently, there appears to be no evidence of any health benefits for sitting opposed to standing to urinate for men. Studies amongst women have found that hovering over the toilet seat (as opposed to sitting down) can lead to incomplete emptying of the bladder and may be a factor in developing urinary tract infections (Moore *et al*, 1991).

3.12. Designing toilet provision of disabled and ageing populations

After considering the need of, although unstated, able men and women, Kira's (1976) research turned its attention to the design requirements of disabled and older people. Similarly to the previous 'able-bodied' focused sections he began by considering the social and psychological aspects of disability. He defines disability as 'some significant chronic activity limitation that directly affects their ability to cope with personal hygiene needs' (ibid, 1976:241). Kira acknowledged that the group to which he is referring to is vast and highly diverse in composition and degree of impairment, as well as encompassing young and old, wheelchair user and ambulatory. Whilst it could not be

assumed all would have difficulties with personal hygiene Kira suggests that a high proportion are possibly likely to. Kira also considers people who were over the age of 65 and whose impairments may be age related and directly associated with declining sight, hearing, touch, movement, arteriosclerosis and degeneration of the central nervous system, deteriorating balance, being unable to stand for long periods, and having difficulty bending over. He notes that although physical bodily changes may not be associated with any particular disease or condition, there must be accommodation within the built environment to support aging populations to ensure that they can 'continue to function with a degree of normalicy and independence' (ibid, 1976:241).

Kira stresses the importance of personal hygiene facilities for these populations to ensure independence but also so that assistance can be comfortably provided if needed. Noting that the activities involved in personal hygiene can be strenuous, and the facilities hazardous even for young able bodied people, he stresses that personal body needs and functions remain the same however the ability. For some, what was once an activity performed with ease can become both physically and personally difficult. The ability to care for the self is a recognised measurement of independence and with sensitively designed facilities more independence will be ensured. Psychologically, Kira recognizes that social attitudes towards ability to toilet and continence management can result in the loss of self–esteem. Linking attitudes to toilet training in childhood and improvement through learning, Kira suggests whereas the child is praised for successful toileting, the loss of continence in an adult is resented as it suggests a path towards continued degeneration of a condition. In addition, a loss of personal privacy violates strongly held values and also generates discomfort and embarrassment, as it crosses the line of privacy for others and privacy from others. Kira stresses that these psychological factors also have to be considered as well as the physical barriers that prevent older and disabled people toileting with dignity, comfort and ease.

3.12.1. Design Criteria for personal hygiene facilities for the aged and disabled.

Although encompassing some aspects of the medical model of disability, Kira acknowledges that the disabled population is probably one of the most diverse groups encompassing not only wide ranging abilities but also age, gender and cultural needs.

Within the physical design considerations, and considering the wide variation in the degree of impairment involved, Kira stresses attention should be paid to:

- Visual and auditory impairment
- Sensory and tactile loss
- Loss of equilibrium and balance
- Impairment of judgment and reflexive responses to stimuli
- Circulatory impairment
- Loss of manipulative ability
- Loss of locomotion ability

Kira concludes *The Bathroom* with a call for what appears to be a more inclusive design approach, by stating that; '*The ultimate irony is that most of the 'special' requirements necessary for aged and disabled persons are really not that special' basically they represent careful attention to human needs and in many cases would be equally suitable and useful for the normal population. What is perhaps really 'special' is that in the case of aged and disabled persons, we cannot permit ourselves the casual adaptation to an unresponsive environment that we normally tolerate* (ibid, 1976:255).

3.13. The Ageing Excretion Experience

As described in the previous chapter, the UK population is ageing, and the services and provisions to meet the needs of the ageing body may need to shift to consider some of the most basic of biological needs, such as the need to use the lavatory. In 2006 the report *'Nowhere to Go'* published by the

charity Help the Aged found that the lack of available public toilets directly affected people's lives, especially those of older people. The report highlighted how many older people do not leave their homes without knowing and being reassured that there is some level of public toilet provision. Help the Aged found that 12 per cent of older people felt trapped in their own homes, and that approximately 100,000 older people never go out.

It is evident that there is a significant sector of the population that are older and that this sector will increase, as will the incidence of disabilities primarily found in older people. These include chronic health conditions such as cancers of the bladder and bowel, which will have a direct link to toileting, and the majority of those effects will be, due to increased life expectancy generally experienced by women.

Current disability figures are determined by those considered fit for work. However, it could be surmised that if people are fit enough for work yet need to use the toilet more frequently, for example on the journeys to and from work, the lack of suitable provision may become an excluding factor for fitness.

To cater for a population's needs, services also have to consider wider identity affiliations. People tend not to come in neat packages of just being 'old' or 'disabled'. Many older people, whilst requiring mobility assistance such as walking aids do not consider themselves disabled, whilst many disabled people are young fit and active. In addition, many older people have faith considerations that are strongly observed; equally, many disabled people also have faith adherences. Hence, it is important that when considering how services such as lavatory provision may best serve the public, due account is taken of the wider needs of the public body, their age, ability, faith observances, and gender.

3.14. Conclusion

This chapter reviewed literature on toilets from the perspective of how the body experiences the designated space of excretion. The experience of excretion is based on the biological need to urinate and/or defecate, in turn these actions are prescribed by the health and life cycle of the body. However, this subject is not only taboo for social intercourse, but also for wider academic and policy consideration, especially concerning bodies whose physicality, whilst identified by gender categories, do not follow the normative structure as discussed in chapter two.

The socially designated space for excretion is the toilet, and Kira's work has provided a detailed overview of the design criteria to meet this experience. Whilst the predominate analysis for Kira's work is from a domestic perspective, it does identify important considerations for the design of public provision, notably that this is a space where a private act takes place in public. Kira describes the public restroom as a 'transient' space and thus draws attention to its use within the body's movement in the space of the city.

Considering the experience of the body within the space of the city, the case for toilet provision can be seen as essential for such experience. The mobility of the body is explored through the metaphor of the 'transport chain' to illustrate the separate parts of a whole journey and the links that allow the journey to be taken seamlessly from A to B to C with a lack of toilet provision within this chain considered the 'weak link'.

Greed (2003) has noted that responsibility for provision is 'fragmented' with no singular central body taking responsibility for the body's excretory needs. The lack of provision to meet the experiencing body results in excretory practice of street urination and defecation outside of the designated space.

There has been no research to quantify the cost to the public purse on the provision or lack of to meet the toileting needs of the public. However, Reeves

et al (2006) do provide a glimpse of the economic perspective by highlighting how Over Active Bladder (OAB) may incur public cost. However, it may be suggested that some of these costs are becoming the onus of the private sector with the shift of toilet provision being made from local authorities to businesses legally obliged to offer toilet provision.

With provision traditionally divided by gender, further divisions are revealed in the parity of provision resulting in more excretory options for the experiencing male body then for the female. This has given rise to the issue of toilets becoming a feminist issue in architectural history. Whilst other academic disciplines also explore the cultural role of the toilet, this is predominately based in the domestic environment of the 'normal' body. Consideration to the experiencing disabled body, is given by Kira (1976), and hints towards and inclusive approach to the design of toilet provision. Yet Kira's attention still rests on the division of provision by bodily difference.

It can be surmised that current public lavatory provision (where it exists), for both people with disabilities and for the able bodied is inadequate and does not meet their specific needs for excretion. Whilst designers have drawn on a range of 'domestic' and 'clinical' stereotypes, there has been little attention paid to how these affect both the functionality (cleanliness, safety, comfort and convenience) and the aesthetics (acceptability, user-satisfaction) of the products and environment. This often means that professionals involved in publicly accessible toilet design and manufacturing offer service providers a narrow 'traditional' set of solutions, albeit sometimes along with 'innovative' products that, due to their unfamiliarity, may not be welcome by many users. Such innovative solutions may only confuse users, or even present the lavatory and its immediate surrounding area as hostile or threatening.

In cases where provision falls short of user demand, the resulting street urination and defecation cause public health, hygiene and nuisance problems. This behavior is considered anti-social and is also associated with raised

levels of aggression through a pervasive drinking culture. Such behavior causes problems for law enforcement. In addition, human waste as ‘matter out of place’ (Douglas, 1966) makes the streets look and smell unwelcoming and cause physical corrosion to the built environment. In not responding to the call of nature, civic leaders (local authorities and chambers of commerce) appear to be ignoring the problem and simply continuously cleaning up the consequences of inadequate toilet provision. Such a cycle is not a sustainable option. In fact as Help the Aged (2007) have argued, a lack of thoughtfully designed and carefully managed publicly accessible toilets located in central areas of the city as well as community identified urban and rural localities, that cater to the needs of the community both through physical access and social sensibilities, can severely affect many peoples social well being and wider quality of life.

It is currently recognised that twin challenges currently face human society, these being the repercussions of climate change and the global ageing population. Here the experiencing body is biologically changing, and excretory needs may be required to be met more frequently, especially if wider social necessities such as extended working lives to address the issue of pension finance to public spending are to be observed. The provision of more publicly accessible toilets that are designed to meet the needs of the ageing body may be required on transport routes, specifically if the challenges of climate change are also to be observed with the experiencing body relinquishing the car.

4. Understanding the interior of public lavatories.

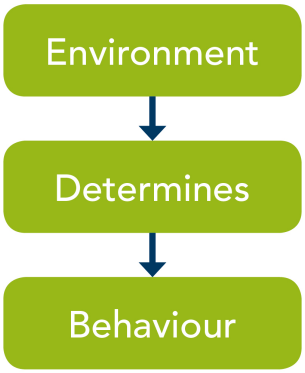

Figure 14. The shift from environment to behaviour

4.1. Defining the space

The previous chapter explored the accessibility of public space to highlight how the issue of public toilet provision should not be seen as an isolated design problem, but one that is set in a wider environment. For the provision to be truly accessible, the journey to the lavatory also has to be accessible. More then this, the analysis has taken a body centred and body conscious approach to design.

Having discussed the external environment outside of the lavatory, this chapter will now move on to explore the internal lavatory environment based on a number of guidelines that have been issued to inform designers and architects how a toilet cubicle should be designed and furnished. Here architectural interior design becomes entwined with product design, and it can be suggested that such guidance reaffirms the status quo of ‘normal science’ as based on current knowledge in the field of study. The design of the public toilet cubicle has been situated into two main areas, these design solutions reflect the binary division of society by physicality and those considered able and catered for through a standard toilet cubicle, and those considered disabled and thus requiring additional space and cubicle enhancements.

Initially public toilet design comprised a 'standard' cubicle for most users and a disabled cubicle for people who use wheelchairs. Over a number of years the design of the lavatory cubicle for non-domestic environments has evolved and now has two additional design options – that of the ambulant cubicle, a larger standard cubicle that is incorporated into a row of cubicles and the 'Changing Places' cubicle, which is ideally provided in addition to the accessible cubicle. However, whilst it can be considered that there are 4 design options for lavatory facilities, the reality of provision is that it will mostly be divided between the 'standard' facility and the 'disabled'.

It is common practice when designing toilet facilities that provision in terms of area and space, is divided equally between men and women. Yet research (Kira 1976, Greed 2003, Anthony & Dufresne, 2007) suggests, that women take twice as long to use the toilet then men and as a consequent provision is often inadequate for women who are then obliged to queue. The inclusion of urinals within the space of the men's toilets may actually increase male-based provision and effectively demonstrate gender inequality in public space (Greed, 2003; Gershenson & Penner, 2009). Hanson *et al* (2004) suggest, this discrimination has not been widely challenged as women, excluded from the space of the men's toilets, may not be aware that provision between the genders is unequal.

4.2. BS 6465 (1996) Part 2. Code of practice for space requirements for sanitary appliances

The British Standard BS6465 Part 2 (1996)[1] is a code of practice that offers guidance for architects, designers and providers of sanitary facilities in buildings that are for non-domestic use. Known as BS6465, the standard acts

[1] BS6465 was revised in 2006 with the addition of *BS6465 Part 4 Code of Practice for the Provision of Public Toilets*. These have not been considered within this analysis, as the guidance would not reflect toilet provision as experienced by informants. It is of note that whilst Parts 1 and 3 of the standard were revised in 2006, Part 2 which specifically recommends design and space use, remained unchanged from the 1996 guidance presented here.

as a recommendation to the minimum that should be considered when providing facilities, and does not have any legal standing. In contrast to guidance on domestic sanitary arrangements, which provides a design matrix of possible arrangement solutions, the dimension requirements for non-domestic sanitary facilities such as public toilets, are not given. However, the standard provides a number of definitions regarding dimension considerations, these include:

- Appliance space – refers to the area required for sanitary appliances such as WC pan and where applicable the cistern and related pipework and fittings. Other appliances such as large drum toilet roll holders are not considered.
- Activity space – refers to the area needed for the user to use the WC pan as well as for cleaning and maintenance.
- Luggage zone – refers to the area allocated for temporary storage of luggage, but also for 'temporary parking' of pushchairs, prams or shopping trolleys, with the actual dimensions appropriate to the type of 'luggage' expected at the facility[2].
- Circle of clearance – is the area between the WC pan and an adjacent door swing.
- Non-domestic applications – directed towards the consideration that users maybe carrying luggage as well as wearing outdoor clothing.
- Disposal bin zone – refers to the area allocated for the use of a sanitary bin.

To illustrate these requirements the BS6465 Part 2 provides templates that will now be discussed in further detail below[3].

[2] The section of the BS 6465 (pg. 1) that lays out these references does not mention this space as also suitable for adults accompanied by small children. Reference to this also being suitable for this type of use does not appear until page 5 in regards to point 10.2 Dimensions of facilities in public conveniences.

[3] BS 6465 provides seven cubicle design templates, however, only six will be discussed here as the seventh that incorporates a hand wash basin along the same wall is uncommon in public lavatory facilities.

Figure 15 shows a template of a cubicle space that measures 800mm in width. There are no exact length dimensions given, instead dimensions are provided to show the required clearances in cubicles, leaving the overall size of the cubicle to be determined by the designer and based on the dimension of the sanitary fittings. This figure illustrates that the circle of clearance is considered to be 450 mm to one side of the WC pan, within a circulation space of 600 mm lengthways. Although the standard is not explicit concerning provision of gender, the lack of appropriate bin space for sanitary disposal suggests that this cubicle is suitable for male facilities.

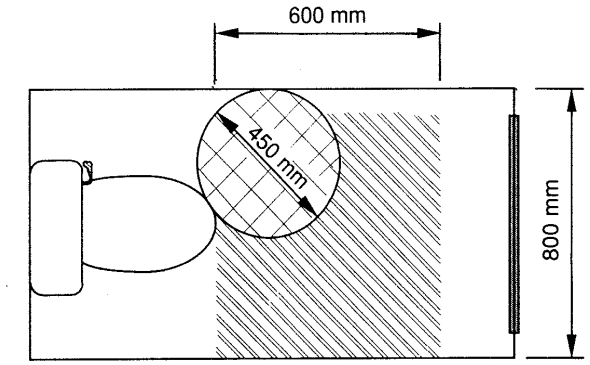

Figure 15. WC cubicle without a bin zone. BS6465 Pt 2. 1996:19.

Figure 16. Illustrates the same size cubicle but includes the dimensions of 540mm x 210 mm for sanitary bin provision.

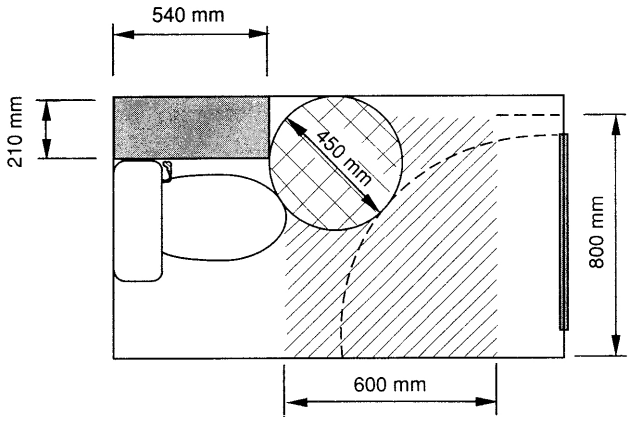

Figure 16. WC cubicle with a bin zone. BS6465 Pt 2.1996:19

The Water Industries Act 1991 states that no sanitary waste items should be flushed down the WC pan as to do so could cause a blockage within a sewer or drain. There is no standard size of sanitary bin and sizes can range dramatically (table 8).

Sanitary Bin Model	Height mm	Width mm	Depth mm
h-e-d	517	182	345
Maidstone	580	155	490
Halo	472	164	436
Intima small	510	160	400
Intima large	510	160	550

Table 8. Selection of sanitary bin models highlighting dimensions.

None of theses models exceed the required width dimension as guided by BS65465, whilst only one model (Intima large) exceeds the length dimension as described in the guidance, and could possibly impede the circle of clearance. However, all of the bins exceeded the average height (400 - 450mm) of a standard WC pan. Greed (2003) has argued that the size and height of bins can block access to the user as well as create hygiene concerns for women coming into close contact with the sanitary bin whilst seated on the WC pan. Also confusion in management of sanitary disposal can lead to multiple bins being placed in cubicles, further decreasing activity space (figures 17 and 18).

Figure 17. Standard cubicle with two sanitary bins.

Figure 18. Standard cubicle with three sanitary bins.

Figure 19 outlines the design of a cubicle to suit an environment where luggage is a consideration, this would include airports, train and bus stations. In this plan, the luggage zone is considered a space of 900mm. The cubicle width is roughly extended by 200mm (or the approximate width of a sanitary bin) to approximately 1000mm, but no direct dimension guidance is stated.

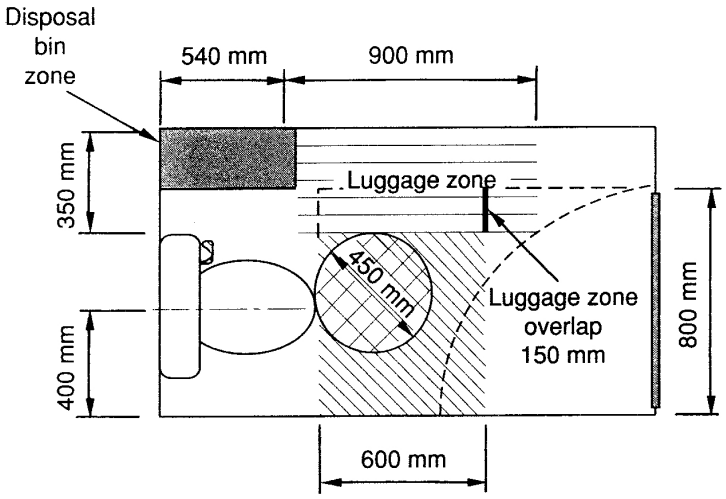

Figure 19. Cubicle to accommodate luggage temporarily with inward opening door. BS6465 Pt 2. 1996:20.

Figure 20 outlines a smaller cubicle for the temporary storage of luggage but with consideration for an outward opening door, therefore reducing the need for the internal circle of clearance.

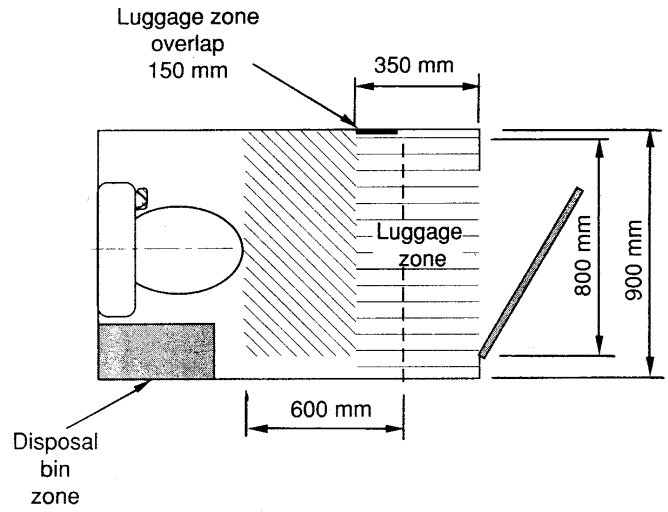

Figure 20. Cubicle to accommodate luggage temporarily with outward opening door. BS6465 Pt 2. 1996:20

Figure 21 illustrates the same cubicle as figure 18, yet without the provision of a sanitary bin. Again, this suggests a cubicle design for male facilities.

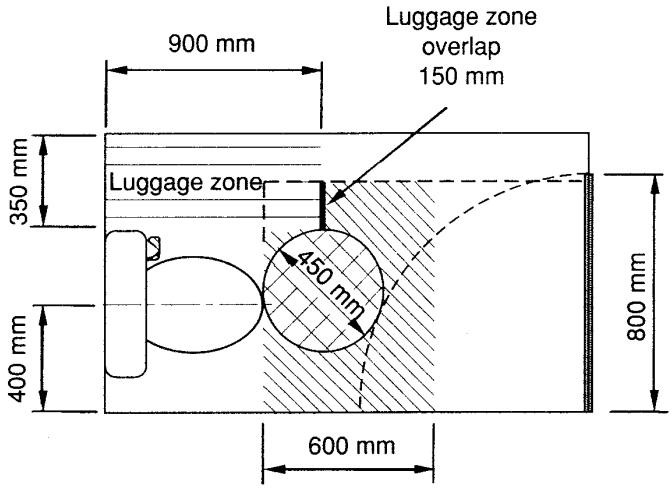

Figure 21. Cubicle to accommodate luggage with inward opening door and no bin zone. BS6465 Pt 2. 1996:21

Figure 22. Incorporates hand washing facilities within the cubicle. However, dimensions are not given for the incorporation of this specific layout, and does not include consideration of hand drying features.

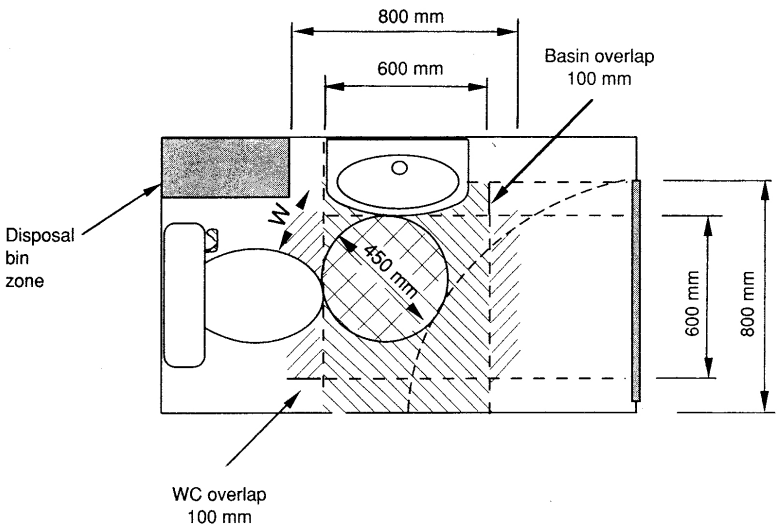

Fig 22. Cubicle to include hand wash basin. BS6465 Pt 2. 1996:23

4.2.1. Size matters: the conflict between the user and space.

The inclusion of a bin within the British Standard template overtly suggests that this is the standard for cubicles in female facilities. However, the bin can impede the space of the cubicle and therefore present less space for women to use the facilities. As primary care givers, such a space may also be required for the toileting of children as well as looking after children whilst a female carer herself uses the toilet. Goldsmith (2000) and Greed (2003) identify how current standard provision does not facilitate the turning of a pushchair within the cubicle, thus such provision can be considered unsuitable for carers of small children in pushchairs or prams. A way to overcome such size restrictions in provision might be for carers to 'fold down' or 'collapse' their pushchair to use the facilities. Yet carers are often on they're own and therefore unable to place the child or baby somewhere secure whilst folding down the pushchair or pram (as well as putting the chair or pram up again after using the lavatory facilities). Also consideration should be given to the design of many modern push chairs and prams being for pedestrian activity and therefore doubling as shopping carriers, in which bags of shopping and children have to be removed for the pushchair to be collapsed to also fit inside the cubicle.

The common dimensions of a standard cubicle, descried by Goldsmith (2000), were to the order of 1500 X 850 mm. Yet, he noted that such space was still ‘uncomfortably small for both men and women’ (ibid, 2000:68). The lack of direct instruction in the British Standard guidance concerning the dimensions of the standard lavatory cubicle can impede on the circle of clearance, especially in cubicle design that includes an inward opening door. Such a reduction in space can make it difficult or uncomfortable for people to stand in the cubicle and close the door, and can be especially problematic for women who are pregnant and who may often have to use the toilet more frequently through their pregnancy, especially negotiating inadequate space as their body grows through the term.

The provision of a bin zone in the BS6465 plans is assumed to be for sanitary use and therefore only required in female cubicles. Provision for other wastes, such as nappies, training pants and adult-changing pads, is not considered. BS6465 can also be considered to not be suitable for the needs of people with obesity who may also have difficulty negotiating this space.

The standard also omits to include the provision of toilet roll. Most modern facilities are now equipped with ‘jumbo’ toilet roll holders that do not require frequent changing and therefore reduces service of the cubicle. These larger toilet roll holders have dimensions that almost equal that of sanitary bins (table 9).

Toilet Paper Dispenser	Height mm	Width mm	Depth mm
Jumbo	296	324	130
BC925 Mini Jumbo	273	273	120
BC935 Jumbo	360	360	120
MK2263 Mini Jumbo	260	250	135
MK2270 Jumbo	350	330	137

Table 9. Selection of toilet paper dispensers highlighting dimensions.

Although BS6465 urges that ‘paper dispensers should not be positioned so that access to or use of the appliance is impaired’ (BSI,1996:23) such larger

toilet paper dispensers may not be suitable for the space recommendation of standard cubicle provision.

4.3. Women's Design Service

To counter the official design guidance laid out in the British Standard, a number of 'user groups' have developed their own design recommendation. One of the most enlightened in the area of toilet provision has been *'At Women's Convenience'* by the Women's Design Service (WDS), published in 1990. The guidance describes itself as 'a handbook' on the design of women's public toilets and proposes that the design of public conveniences fails to meet women's actual needs. The work focused on the needs of women throughout the design recommendations but proposed that such design could also be applicable to male and unisex facilities.

The guide's recommendations can be considered progressive for their time and include issues of access for women with mobility concerns, as well as the need for a larger cubicle space for women. The WDS suggested that all facilities included a larger cubicle to cater for women whose needs may require more space, such as in times of pregnancy, or the use of larger framed walking aids. In addition, the WDS highlight how no current provision considers the needs of families including the provision of adequate baby change facilities in both male and female provision, as well as child size WC pans and hand washing facilities that are suitable for children. The WDS noted cultural differences in toilet hygiene practice within some faith groups, and that the preference to using water opposed to paper for toileting was rarely catered for in British public conveniences (WDS,1990:22).

The WDS set out a number of design templates to illustrate the need for a more thoughtful provision, that meets not only the physical and cultural needs of users but also the wider social roles of users in society, such as child-care and care of older people.

The WDS design templates do not focus on the design of a specific cubicle, instead these templates illustrate forms of provision suitable to population needs. For example, figure 23 illustrates ‘basic facilities’ that caters to male and female provision but that includes two accessible cubicles. These cubicles are ‘gendered’, but could also be based on users’ transfer preference for a left or right-sided WC pan. Given the symbolic meaning of disabled facilities as generally unisex provision (for the user and carer of the opposite gender) such gendered accessible facilities would offer the user the opportunity to use facilities of their preference. This provision would only be suitable for low use environments, and the provision of a separate nappy changing area ensures that WC cubicles were available to those who may need them.

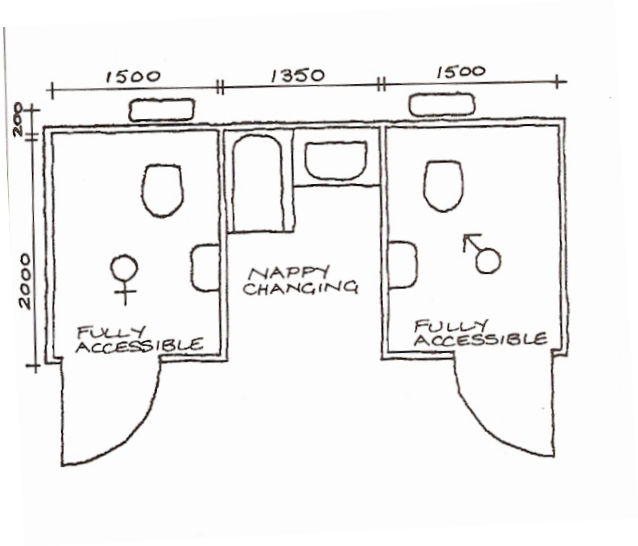

Figure 23. Template of basic facilities providing nappy change area and accessible gendered cubicles. WDS,1990:57.

Figure 24 extends the design in figure 21 and includes provision of a child’s WC. This form of provision could be considered suitable for an area specific for children such as a local park.

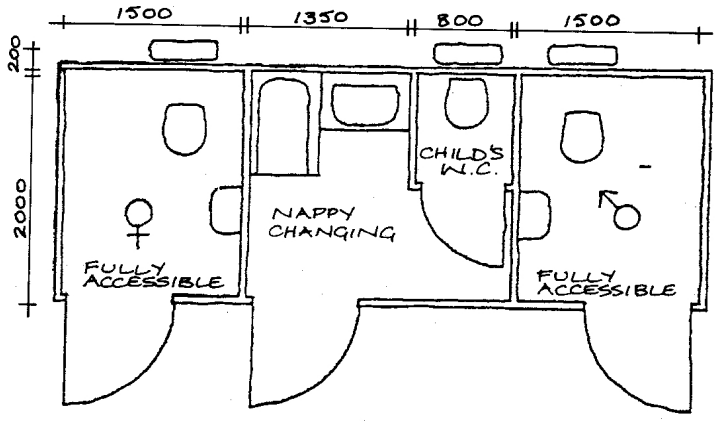

Figure 24. Template of basic facilities with larger unisex nappy change area, child's WC and accessible gendered cubicles. WDS,1990:57.

By providing accessible cubicles in both these design templates the WDS illustrate an inclusive perspective, as the accessible cubicles with dimensions of 1500 x 2000mm not only meet the needs of people with disabilities but also provides adequate space for women who are pregnant, people with luggage and/or prams or pushchairs, as well as access to water for faith groups who use water in their toilet practice.

Figure 25 illustrates wide scale provision for denser population needs such as that of a local high street. Provision includes facilities for children and gendered provision of an accessible cubicle. This plan also includes space for an attendant.

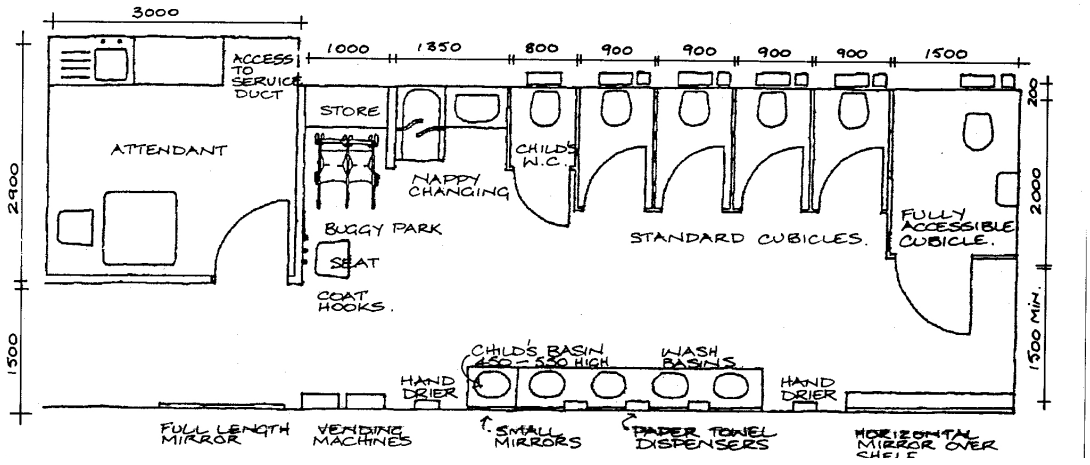

Figure 25. Template of 'medium sized' facilities[4] WDS,1990:57

Figure 26 of the guide provides an elevated view of the cubicles. It is of note that sanitary disposal is through a form of wall provision to an outer service area therefore eliminating the need for a bin and increasing the space of the cubicle. In addition, toilet roll provision is of a 'domestic' design and therefore does not impinge dramatically on the space.

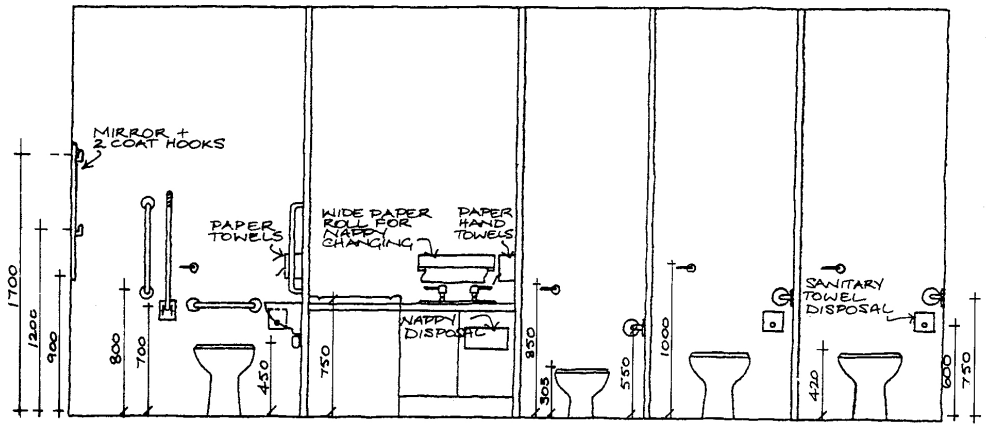

Figure 26. Elevated view of accessible cubicle, nappy changing, child and adult cubicles. WDS,1990:58.

The final design template suggested by the WDS (figure 27) illustrates the recommended minimum size of the standard toilet cubicle. The consultation for this design guidance was undertaken amongst women and can therefore be considered adequate to meet not only their biological needs for toileting but also the wider social roles they undertake such as caring as well as shopping. The plan includes provision of a concealed duct to prevent vandalism of WC cisterns as well as inset sanitary disposal. The WDS suggest the standard cubicle should have a width of 900 mm and a length of 1500mm, with a minimum clearance between an inward opening door and the WC pan of 250mm.

[4] The WDS guide states that this plan is for women's facilities, yet could also reflect provision for men without urinal provision.

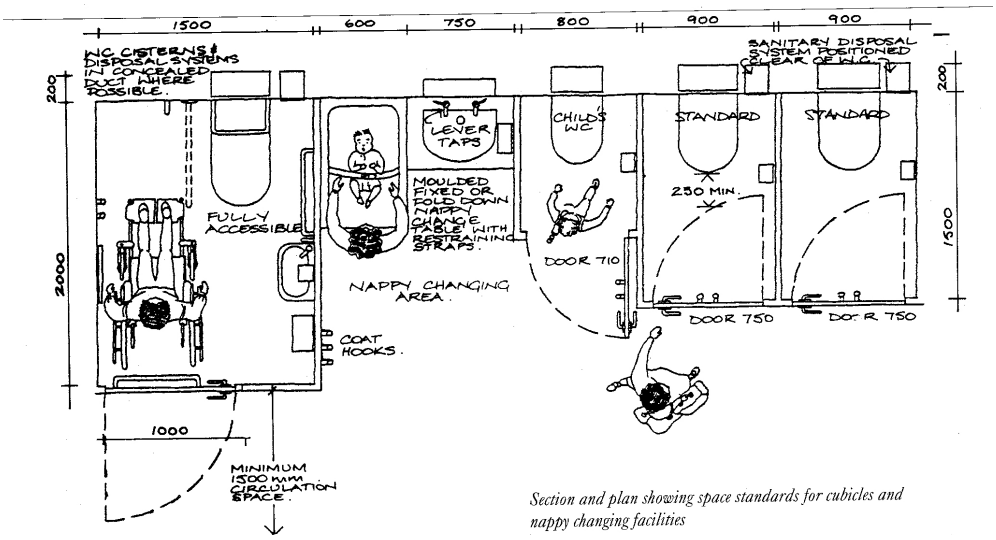

Figure 27. Section and plan showing space standards for cubicles. WDS,1990:58.

4.4. The Good Loo Design Guide: extending standard provision.

The Good Loo Design Guides (Thorpe, 1988) was originally published by the Centre of Environments for the Handicapped in 1988, and focused on the design of the accessible toilet cubicle as additional provision for people with disabilities. In 2004, the design guidance was updated by the rebranded Centre for Accessible Environments (CAE) and included not only continued design solutions for the accessible cubicle for disabled people who require mobility aids such as wheelchairs, but also design guidance for the provision of an ambulant cubicle for disabled people who do not use wheelchairs but may require more space than provided by the standard cubicle.

The CAE focused their design guidance on the reticence to discuss how people, especially those who may need assistance, be that from a carer, or from well thought out design, actually use the lavatory facility. The CAE proposed that ‘the lack of forthright, unembarrassed and factual information about how disabled people actually use a unisex or other loo’ (Lacey, 2004; 2) resulted in continued poor design and, for many, unusable facilities. They suggested that due to the absence of user-centred studies that illustrated these issues in a clear and concise way, there remained an ignorance concerning what fittings are for and how they are actually used.

Toilet cubicles that are considered suitable for ambulant disabled people should be available within a bank of toilet cubicles in separate sex facilities, and preferably as many compartments as possible should be of this standard. If there are more than four cubicles in each facility, the CAE recommends that at least one should be of ambulant design. The term ambulant disabled is used to describe those who may require the assistance from grab rails and a larger cubicle space, but who do not require the space of the wheelchair accessible toilet. In many respects this could be considered the majority of the population who consider themselves disabled, as it is estimated only 5% require the use of a wheelchair. The ambulant cubicle may offer more support for older people who benefit from the support of grab rails in the cubicle but who do not use the larger accessible cubicle as they do not consider themselves disabled.

The CAE also reported that some disabled people might prefer to use a 'standard' toilet cubicle, as the space and fittings of the accessible cubicle may also not suit their needs. This includes, people of short stature, and people with mobility problems who find larger spaces difficult, as there is less support to aid balance when removing clothes to use the toilet (Lacey, 2004). The guidance listed a number of design guidelines for the 'standard' cubicle that could effectively make this provision more accessible these include:

- Door handles placed at between 800 -1000mm, reachable by people of short stature.
- Cubicle locks which are accessible (larger and of a sliding mechanism).
- A minimum 450mm maneuvering space between the swing of an inward opening door and the WC pan.
- Colour contrast between WC furniture and walls.
- Non-slip floor.

Figure 28 illustrates the CAE's recommendation for the standard accessible cubicle. The illustration also includes the provision of grab rails. Yet it has

been suggested that grab rails of the design illustrated here could prove a health and safety concern for some users who may get their hands and arms caught in them[5].

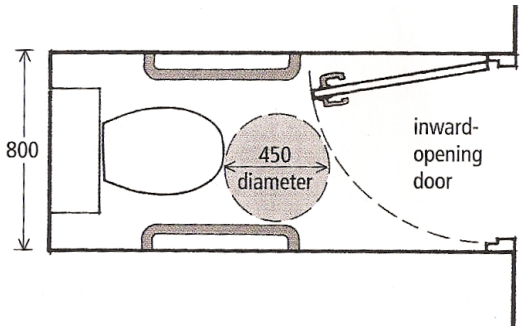

Figure 28. Accessible standard cubicle. CAE, 2004:22

Following the same guidance as the British Standards, the CAE recommendations do not include cubicle dimensions. The area of space between the internal door swing and the edge of the WC pan is 450mm, and unlike the BS 6565 guidance, this is directly in front of the WC pan. In practice this would mean the user would not have to move to one side in order to close the door.

In addition to the design template of the standard cubicle that is more widely accessible, the guide also includes a design solution for the provision of ambulant disabled facilities (figures 29 and 30)

[5] Interview with Gerry Brophy, Principal Crime Prevention Design Advisor at Hertfordshire Constabulary April 2010

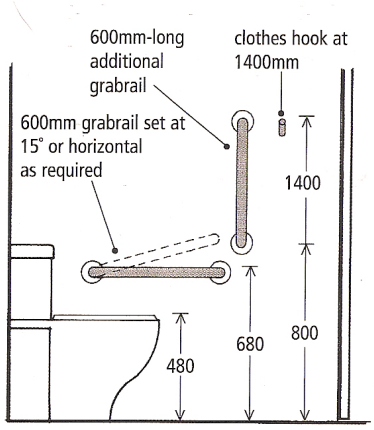

Figure 29. Elevation for ambulant disabled cubicle. CAE, 2004:23

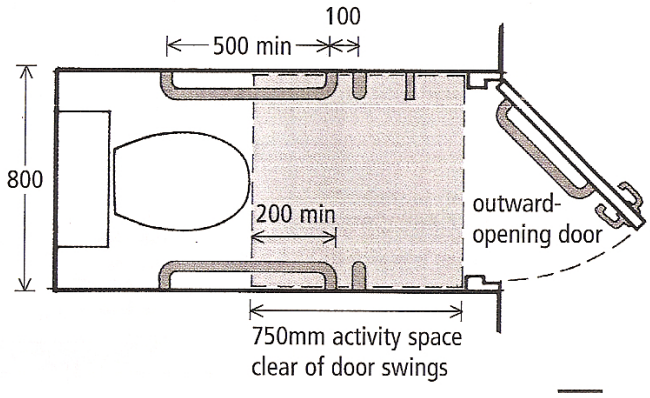

Figure 30. Floor plan for ambulant disabled cubicle. CAE, 2004:23

Although this design shares the width of the standard cubicle of 800mm it has increased activity space within the cubicle of 750mm and is recommended to be a minimum of 1500 mm long. The CAE recommend that the door swings outwards and includes a horizontal grab rail set at 1000mm. However, should the door swing inwards the 750mm activity space should also be maintained. In addition to grab rails, (to protrude no more then 90 mm from the wall so as to not restrict cubicle space), ambulant provision should also contain a coat hook at 1200-1400 mm high and if possible a shelf (the design template does not include this).

4.5. BS8300:2001, Design of buildings and their approaches to meet the needs of disabled people – a code of practice.

This chapter will now consider the design of lavatory cubicles for people with disabilities, specifically users of wheelchairs who require more space and assistance from fittings such as grab rails. The British Standard BS8300;2001 was the current guidance in place during the course of the fieldwork and is referred to here[6]. BS8300 will be evaluated in some detail as it is considered the benchmark of what is generally understood to be the template for an accessible toilet, yet it carries no legal enforcement. The Standard sets out the principle that *'disabled people should be able to find and use suitable lavatory accommodation no less easily than non-disabled people'*. Noting that the space requirements are driven by the needs of disabled people who use wheelchairs, it also recognises that people with disabilities who do not require larger space may also need to use the facilities. BS8300 does not assign the lavatory by gender, instead recommends that a unisex cubicle is the preferred provision, especially where space is limited and only one accessible toilet can be provided in a building. However, the Standard does recommend that where space allows an enlarged wheelchair accessible cubicle or a WC compartment for ambulant disabled people in gender specific facilities should also be provided. It emphasises the importance of maintaining the 'correct' relationship of the WC pan to the hand washbasin and the other fittings, and to the space required for manoeuvring a wheelchair to access the cubicle and the internal fixtures and fittings [7].

BS8300 offers general guidance on suitable locations and accessible routes for placing accessible toilets within buildings. Whilst BS8300 notes that some users may require toilet facilities more frequently, it does not consider that increased frequency of use may also be matched by the need to occupy the lavatory cubicle for a longer period of time. Although not explicit, BS8300

[6] The British Standard 8300 was revised in 2009, and included a number of revisions such as placement of sanitary provision, ambulant cubicle layout and changing rooms toilets.
[7] The standard also gives guidance on the design of a peninsular layout cubicle. This is predominately found in care environments so has not been included within this discussion.

suggests that provision of the accessible toilet is limited to those who require the space and assistance of the enhanced cubicle, and therefore is not made generally available to members of the public. In creating a certain ambiguity of use, the guidance frames the issue of whether disabled people have exclusive or priority use of the accessible cubicle to one of management and not a legislative issue.

4.5.1. The Unisex Accessible Corner WC

Figures 31 and 32 below shows the BS8300 recommended layout for a unisex accessible corner WC.

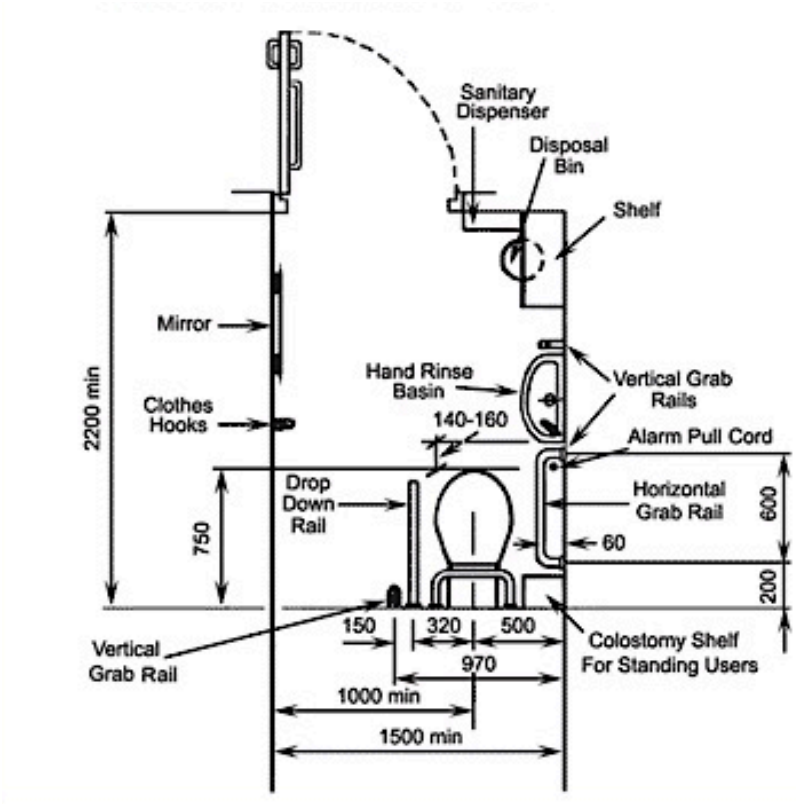

Figure 31. Plan BS8300, 2001

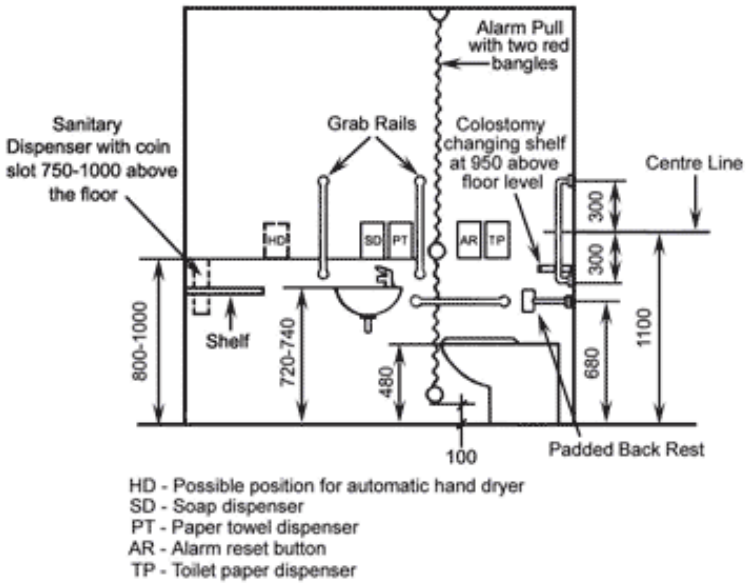

Figure 32. Layout BS8300, 2001

Compliance with this guidance is met by following the room dimensions and the key dimensions relating to sanitary ware and fittings to a minimum. In contrast to the Good Loo Design Guide, BS8300 notes that the unisex accessible compartment is also suitable for ambulant disabled people, suggesting a one-size fits all design solution for providers. With the layout set to one side, the cubicle may not be accessible to those whose disability may focus on the opposite side of their body. To counteract this, BS8300 suggests that where there are several accessible cubicles, they should be appropriately 'handed' for both left and right hand transfer. Such provision is generally only found in large multi-floored buildings and does beg the question as to if toilet sided preference is solicited/ elicited in work interviews with regards to assigning appropriate desk space. Touch legible pictograms are recommended to indicate if the cubicle is suitable for left or right handed transfer, although no details are provided for the height the pictograms should be set.

To ensure the detailed design features of the unisex accessible WC are followed and therefore ensure that the greater number of disabled people can use the facility, the accompanied illustration commentary advises:

- The top surface of the WC seat should reach a height of 480mm above the finished floor as this is the equivalent to the height of most wheelchairs.
- If a plinth is used to achieve the correct seat height, it should not obstruct the access and use of the WC by wheelchair users and ambulant disabled people[8].
- The flush should be operated by a spatula type lever handle or sensor (infra-red).
- In a corner compartment, the flushing mechanism should be on the open, transfer side of the WC pan.
- In existing buildings[9], where there is a chain pull from a high level cistern, this should also be on the open side of the WC pan, and should terminate with a ring handle of 50mm diameter, positioned between 800 and 1000mm above the floor.
- The WC seat should be designed for heavy-duty use and securely fixed with metal (preferably stainless steel) fittings. If seat covers are used they should not impede transfer and strong seat covers can act as a backrest for close coupled WCs[10]. A gap-front seat should not be used.

The standard does not make any recommendations on colour and luminance and contrast of sanitary fittings and aid, suggesting that lighting should be of no less then 100 lux at floor level[11].

BS8300 also contains a series of recommendations about the location and positioning of grab rails around the WC, including:

[8] This suggests that in some cases a standard WC pan (approx. 430mm with seat) may be acceptable instead of the raised height (480mm) WC pan.
[9] It is noted that a chain pull flush mechanism should only be found in existing buildings.
[10] This differs from BS 8300 (1996), which recommended that no seat covers be installed.
[11] This differs from BS 8300 (1996), which made recommendations that the colour and luminance of sanitary fittings and aids should contrast with the background wall and floor finishes to help people with impaired vision to distinguish them. Shiny floor and wall surfaces should also be avoided as they may produce reflections and glare that confuse people with impaired vision. Floors should be non-slip, especially when wet.

- All horizontal fixed and/or drop down rails should be at a height of 680mm above finished floor level.
- The drop down rail should be placed on the on the open side of the WC and should be fixed with its centre line 320mm from the centre line of the WC.
- The drop down rail should extend 50-100mm beyond the front line of the WC.
- The fixed rail on the sidewall should have a clearance of 50-60mm between the rail and the wall.
- A fixed horizontal rail that supports a padded backrest, should be located in the centre behind the WC pan, especially when the cistern is in a duct. However, depending on the type of cistern chosen, the padded rail must allow the WC seat to tilt beyond the vertical and remain raised so that the WC is comfortable and safe to use and can be used as a urinal.

The standard does not make explicit the need to not include a seat cover when including a padded backrest. A raised WC seat cover negates the benefit of a padded backrest, as illustrated in figure 33.

Figure 33. Back rest obscured by toilet seat cover

4.5.2. Hand washbasin

Within the accessible WC cubicle, the hand washbasin should be set with its rim at 720-740mm above finished floor level. This allows for hand washing to be carried out in a standing position as well as seated if required. An alternative configuration allows for the basin next to the WC pan to be set lower, at 680-700mm, if a separate basin is provided with a rim height of 780-800mm for ambulant disabled people to use. A space of 1500-1500mm that is unobstructed should be provided in front of the washbasin for a wheelchair to manoeuvre. Two vertical support rails that are at least 600mm long should be fitted on either side of the basin, the mid points should be at 1100mm above the floor. Basins should be fitted with a mixer tap with water flow controlled by an up and down action, so enabling operation by someone with poor grip. The tap should be placed on the side closest to the WC to enable operation by a person who is still seated on the WC. The maximum water temperature should be 41 degrees Centigrade.

4.5.3. Lavatory Accessories

BS8300 calls for accessories found in the lavatory to also be accessible. Soap dispensers, toilet paper holders and paper towel holders should be capable of being operated using just one hand and by someone with weak arm movements. They should be within reach and operable by a person in a wheelchair or seated on the WC, and to a standing person. Both an automatic hand dryer and a paper towel dispenser should be provided and placed between the wash hand basin and the cubicle door [12].

Mirrors should be located above a washbasin set as closely as possible to the top of the basin extending at least 1600mm above the floor. Mirrors that cannot be extended to the top of the basin should be tilted forwards so as to be suitable for use by most people. A tilting mirror may also enable a smaller mirror to be provided. Mirrors located away from a washbasin, should be a

[12] In the 2006 revision to the standard it was recommended that 'hand dryers that require the user to insert their hands in the top of the dryer should not be installed' (BS8300, 2006:149).

minimum of 1000mm tall and have the bottom edge set at 600mm above the floor. It is not recommended to have large expanses of mirror as these can cause problems for people with impaired vision.

Bins are recommended to be incorporated into the design of the WC compartment so as to not impede transfer of a wheelchair user onto the WC. Although not explicit in recommending bin placement for compartments that have not incorporated bins into the design, for example inset in the wall, the standard does state that bins should not be placed 'within the manoeuvring area for wheelchairs' (BS8300;2001:149). Any wall mounted vending machines, should not reduce the clear width of door openings.

A shelf is designated for people who need to change colostomy or urostomy bags. BS8300 recommends that a shelf be placed at 950mm above the floor close to the WC pan. An additional shelf set at 400mm wide by 200mm deep and 700mm above the floor, is also recommended to be placed near the washbasin but not to impede the wheelchair manoeuvring area. Lastly BS8300 recommends the inclusion of two clothes hooks placed at 1050mm and1400mm above the floor. The height differentiation of the clothes hooks ensures that they are accessible to ambulant disabled people and those who use wheelchairs.

4.5.4. The Door

The door of the accessible WC compartment is particularly important, as it must satisfy two uses. Firstly, it must be secure to provide a sense of security to the user, that they will not be seen whilst toileting and therefore can carry out this personal matter in dignity. Secondly, that should an accident occur, the door can be opened to allow for help to intervene. In short the design of the door could assist the saving of lives if someone has a health related incident or falls whilst using the facility. The door should be outward opening and fitted with an emergency release mechanism that can be operated from outside the cubicle. A horizontal closing bar should be fitted on the inside of

the cubicle to allow closure by someone with limited arm strength or seated in a wheelchair. The door operation can also be assisted by rising butt hinges. To take the specified door furniture, the door itself should be sufficiently robust. In cases where the design of the cubicle can only afford an inward opening door there should be a clear minimum space of 700 by 1100mm between the door swing and any sanitary fittings so as to not obstruct entry for a wheelchair user. Inward opening doors should also incorporate means for the door to be opened in case of emergency. Where a side-hung door is not feasible, sliding doors may be fitted. The door should also accommodate a visual means to indicate if the cubicle is available or in use.

4.5.5. Lighting

BS8300 recommends an illumination level of at least 100 lux in the accessible WC compartment. If lighting is individually controlled within the compartment, it should be through a pull cord rather than a switch. The pull cord should be set between 900-1100mm above the floor within 150mm of the door's leading edge. If automatic lighting is used, it should be supplemented by back-up lighting. Any automatic timing operations should take account of the extra time that users with disabilities may take to use the toilet.

4.5.6. Emergency Alarms

A fire alarm that is visible as well as audible should be installed. An emergency assistance alarm should also be provided in the accessible WC compartment, located so that it can be reached from the WC pan. For assistance to respond to the assistance alarm, it should be visually and audibly distinguishable from the fire alarm. Operation of the emergency assistance alarm should be by a red pull cord, which incorporates two red bangles of 50mm diameter. The bangles should be set on the pull cord at between 800-1100mm and 100mm above the floor. If the alarm is activated there should be visual and audible feedback to notify of activation. Outside the WC compartment, the emergency alarm should be located so that it is easily seen and heard, so that assistance can be given. An additional, remotely sited

alarm indicator may also be incorporated. It is also recommended that the reset control for the emergency alarm should be reachable from a wheelchair as well as from the WC itself, and clearly identified.

4.5.7. Heating

Heat emitters can obstruct the wheelchair manoeuvring space or the transfer space, so consideration should be given to where they are sited. This includes not placing them on the same wall as, or adjacent to, the WC. Heaters should only be located directly across from the wash-basin if the width of the cubicle is increased specifically to accommodate the fitting. The surface of the heater should not be exposed or should be maintained at a temperature lower than 41 degrees Centigrade. Heating is required in the accessible compartment as users may spend a longer in the facility in a state of undress then an able bodied user in the standard cubicle.

4.5.8. Urinals

BS8300 provides advice on the design of accessible urinals for male wheelchair users and ambulant disabled men. For wheelchair users, the space in front of the urinal should be level and unobstructed, allowing access of 900mm wide by 1350mm deep for a wheelchair user to approach. Some men maybe able to pull themselves up to a standing position from the wheelchair, hence vertical grab rails should also be provided on each side of the urinal. Here the guidance also suggests the rails should be fitted where stall privacy dividers are not, effectively denying male wheelchair users the privacy that might be offered to able bodied users of the same facilities. A horizontal grab rail will provide additional assistance to wheelchair users. The urinal should be fixed with a rim height of 500mm for a standing man and 380mm for a wheelchair user. The Standard notes that a lower urinal position may also be helpful to a man of restricted stature, yet does not make the same suggestion in the guidance for lower WC pans for women of restricted height. For both heights of urinal the rim should project at minimum of 360mm from the wall. Urinals of tapering design, extending more than 360mm from

the wall, may allow closer access for the wheelchair and avoid contact with the wall or any pipework. For visually impaired users, the urinal should contrast in colour and luminance with the wall.

4.6 Part M of the Building Regulations (2004)

The British Standards are not legally enforceable and merely provide recommendations for designers and service providers on the design of accessible toilets. The main legal instrument, intended to ensure health and safety for people regardless of ability, age or gender, in and around buildings is laid out in the Building Regulations. The regulations set out functional requirements for the design and construction of new buildings and where alterations are made to existing architecture. The Building Regulations require that all work carried out on a building complies with the legislative requirements. Approved Document M (ADM) of the regulations[13] specifically addresses the welfare and convenience of users by ensuring that buildings are accessible to all potential users. In consideration of sanitary provision and accommodation, other parts of the Building Regulations will deal with wider issues including; building structure, fire safety, energy efficiency, hygiene, drainage, waste disposal and sound insulation.

The ADM was originally introduced in 1987, extended in 1992 and 1998. The regulations were extensively revised in 2004, with these revisions amended in 2010. It includes general guidance for developers in the area of access standards as well as information on ways in which the regulatory requirements can be satisfied. However, as with the British Standards discussed previously, this guidance is not mandatory and developers are at liberty to suggest alternative ways in which the regulatory requirements are adhered to.

The definition of disability was extended in the 1992 edition to include people with impaired sight and hearing, and design guidance included WC provision

[13] Approved Document M is often referred to as ADM.

for disabled people, including ambulant disabled people. In contrast, the 2004 edition does not refer to ‘disabled people’ at all, and can be seen as an attempt by the regulations to ‘foster a more inclusive approach to design to accommodate the needs of all people’ (ADM,2004). The 2004 edition also introduced the concept of an ‘access statement’ which identifies if an inclusive design approach has been implemented, providing a record of where decisions taken to satisfy the legal requirements, may differ from the recommendations in the approved document.

The 1987 introduction of ADM was considered a breakthrough in access legislation, widening the scope of development control to public and commercial buildings and more recently to housing. Yet, ADM is also criticised as weak legislation that ‘couches regulations in a vague and ambiguous manner, which does little to define clearly what is possible’ (Imrie and Hall, 2001). The requirement of ‘reasonable provision’ for disabled people’s access is a particularly contentious issue that is argued to permit too much latitude as to how this is interpreted in practice (Barnes, 1991). In addition, the regulations only apply to new buildings and extensions to existing buildings, exempting any existing buildings constructed prior to 1987 unless they are substantially altered.

The revised edition of ADM came into force in May 2004. Much of the guidance contained in the revisions was based on ergonomic studies carried out by Feeney (2003) to support the previously discussed British Standard 8300. Both the British Standard and ADM are produced with the intent on assisting more people than those with mobility disabilities and wheelchair users, including the access requirements of people with sensory or cognitive impairments. The requirements of ADM for enhanced design quality and higher space standards will be appreciated by people with babies and young children, those with luggage, as well as people who are currently recognised as clinically obese.

Whilst ADM is a substantial document that deals with the approach and access to dwellings and non-residential buildings, it is Section 5 of the guidance, dealing with sanitary accommodation in buildings other than dwellings, which is most relevant to this thesis[14]. In contrast to the British Standard, Section 5 gives advice about toilet accommodation but does not contain information on the design of urinal provision, either for standard of accessible use.

4.6.1. An Inclusive Approach?

With regards to the provision of toilets in public buildings, ADM presents an inclusive perspective. It asserts that suitable sanitary accommodation should be provided for everyone, regardless of if they are a wheelchair user, an ambulant disabled person, a person with a baby or small child and/or encumbered by luggage and requires an enlarged cubicle. ADM includes guidance on the design of all possible sanitary accommodations that also take account of the needs of people with limited sensation, strength or manual dexterity, these include:

- Protecting hot surfaces.
- Ensuring high visual contrast between sanitary fittings, grab rails, the walls and floor of the cubicle.
- Installing taps, light switches and cubicle doors that are easy to operate.
- Using fire and emergency alarms that communicate both visibly and audibly.
- Providing cubicle doors that open outwards.

For the assistance of way finding, especially for people with learning disabilities, ADM also recommends that toilets should be located in a similar position on each floor of a multi-storey building. Yet despite such progressive aspects, the bulk of the design recommendations still focus on the needs of

[14] Not all of this section is relevant, as it also sets out the design considerations that apply in respect of wheelchair-accessible changing and shower facilities and wheelchair-accessible bathrooms.

people with restricted mobility, especially those who use wheelchairs. Such focus may, in practice, lead to a singular approach to access in which the complexity of needs within other groups, such as people with impaired vision, hearing loss, learning disability or restricted growth are overlooked.

4.6.2. Distribution of Accessible Lavatories

The ADM 2004 gives a brief reference to the distribution of accessible lavatory facilities in public buildings, suggesting that a maximum horizontal distance of no more then 40 metres should be permitted, unless a greater distance can be legitimately justified in the access statement. Provision divided by gender can be on alternate floors providing there is access by lifts and that the total horizontal travel distance does not exceed the 40-metre recommendation. This condition can often be met by locating unisex accessible toilet facilities near to lifts on the ground floor without taking into account the numbers of people using the building or the efficiency and reliability of the lift service.

ADM recommends the ratio of provision in the separate male and female toilets should be at least equal to the same WC cubicles for women as urinals and cubicles for men. In some buildings where the ratio of women to men may increase, such as department stores, the ratio could rise to double the amount of provision for women (female WCs to urinals). It suggests that one of the urinals in the male facilities should be set at a lower height for the use of young boys. However, there is no mention of an equitable provision for young girls in the female facilities.

Following BS8300, ADM notes two possible options for designing an accessible toilet, consisting of a self-contained unisex toilet or a specially designed cubicle located within the gendered provision. The regulations offer guidance on both options by setting out the design considerations that underpin the recommendations. This is followed by listing the provisions that are deemed to satisfy the requirements of ADM. It important to consider that

these are generic recommendations, and that in the process of undertaking building work, a person is at liberty to offer alternative solutions that will also satisfy the regulations.

4.6.3. Wheelchair accessible unisex toilets

Many wheelchair users are cared for by a partner of the opposite gender, therefore a separate enlarged unisex toilet is recommended (figures 34 and 35) to meet the need of partner assistance. This cubicle should not be used for baby changing[15], nor should it be dispensed with if any wheelchair-accessible or enlarged toilet cubicles are provided in gendered provision. If the building size restricts the choice of accessible provision and can only provide one toilet, then it should be of the wheelchair-accessible unisex design. Sanitary provision for staff and visitors should also include at least one wheelchair-accessible unisex toilet. Where there are four or more cubicles in sex-separated facilities, at least one cubicle should be enlarged (ambulant) for people who require extra space. ADM states that in large building developments, a separate baby changing facility and an enlarged unisex wheelchair-accessible toilet that incorporates an adult changing table should be provided (although such provision is not obligatory).

Part M sets out a detailed specification for the design of a wheelchair-accessible unisex toilet. The cubicle should be in a convenient location and approached separately from other sanitary accommodation. The design should be directed to support independent use or assisted transfer. Where two or more unisex toilets are provided, the design should be distributed to accommodate left and right hand transfer. ADM follows BS8300 in the careful specification of the overall dimensions of the cubicle, as well as the interior furnishings including the height and positioning of the wash hand basin and WC pan and the arrangement of grab rails and other fittings.

[15] Part M does not discuss the possible needs of disabled parents with regards to baby changing provision.

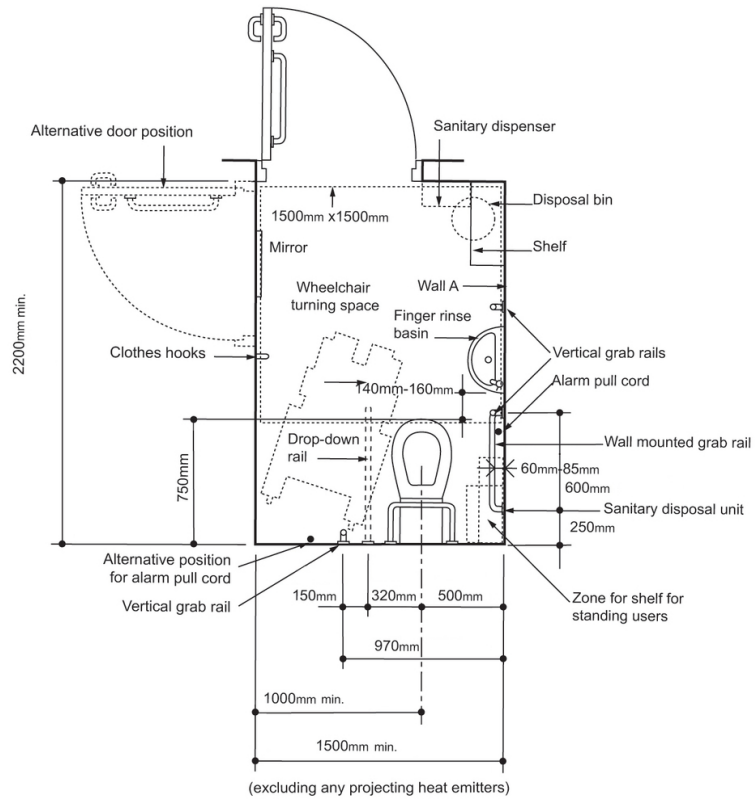

Figure 34. Wheelchair accessible unisex toilet (plan) ADM, 2004;55

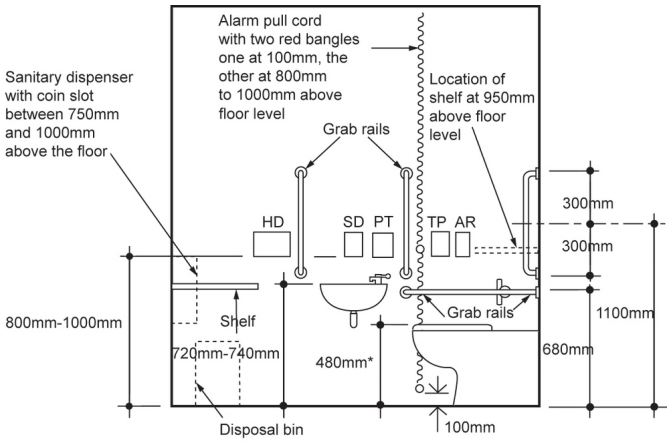

Figure 35. Wheelchair accessible unisex toilet (elevation) ADM, 2004;55

4.7. Comparison Between BS8300 (2001) and Approved Document M (2004)

ADM (2004) follows guidance laid out BS8300 (2001) in many ways. However, a closer reading reveals many differences between these two pieces of guidance. For example, light switches with large push pads are the preference in ADM as BS8300 refers to pull cords. Automatically controlled taps or ones that can be operated by a closed fist (lever taps are suggested) are deemed to satisfy ADM, and the regulations also stipulates the WC compartment door should be fitted with light action privacy bolts. In addition there are also a number of variations in key dimensions (table 10).

Feature	**BS8300; 2001 mm**	**ADM; 2004 mm**
Dimensions from back wall to back of horizontal grab rail	200	250
Depth of horizontal grab rail from wall	60	60-85
Height of rim of basin		
A = Wheelchair users	A 680-700	
B = Ambulant disabled people	B 780-800	
C = For both	C 720-740	
A, B & D = For people standing		D 780-800
E = For use from WC pan		E 720-740
Height to top of mirror		
A = Wheelchair users	1400	A B C 1600
B = Ambulant disabled people	1600	
C = For both	1600	

Table 10. Key dimensional differences between BS8300 & ADM 2004, Unisex Wheelchair accessible toilet.

4.7.1. The Accessible Cubicle in Gender Segregated Facilities

The regulations also state that ambulant disabled people should have the opportunity to use an enlarged WC compartment within gendered provision. This is also seen to benefit other users who would find an enlarged cubicle convenient[16]. Where there are four or more cubicles, the provision of an enlarged cubicle is obligatory under the ADM and, it is suggested that a fold-down table suitable for baby changing can be provided within this space. If within separate sex provision the enlarged cubicle is wheelchair-accessible, it

[16] Such as adults accompanied by babies or young children, people with luggage or people with obesity.

should also be possible for users to access a washbasin. As before, a detailed specification based on BS8300 is provided for the design of the enlarged cubicle so that it meets the needs of users. The new regulations also introduce a minimum distance of 450mm between the swing of any inward opening door to a standard WC compartment and the leading edge of the WC pan and the sidewall of the compartment. A washbasin should be included within the cubicle and set at a height of 720-740mm above floor level. The minimum width of this cubicle is set at 1200mm, although no diagram is provided for the layout of this facility. With layout and fittings based on the design of the wheelchair accessible unisex cubicle, the overall dimensions of accessible provision within gender-segregated facilities should be 2200mm deep by 1200mm wide.

4.7.2. Unisex toilet that is the only facility in the building

Where there is space for only one toilet facility in the building, the ADM recommends that it be of 'Universal' design. The width of the compartment should be increased from 1500mm to 2000m to make it more accessible to all. In addition to the appliances required in the wheelchair accessible unisex cubicle, the compartment should include a standing height basin in addition to the wall mounted 'finger rinse' basin next to the WC pan. No diagram is provided to illustrate this design. However, the overall dimension of the facility has been recommended by the Centre for Accessible Environments (2004) to be 2200mm deep by 2000mm wide.

4.7.3. Toilet Compartment that contains an adult changing bench

The ADM 2004 provides advice on a cubicle that includes an adult changing bench, and that this form of provision is desirable in large building developments. The provision of an adult changing bench could be accommodated in a larger corner unisex accessible cubicle with an extended dimension of 2200mm deep by 3000mm wide (PAMIS, 2003). However, the guidelines do not detail that this form of provision should be in addition to a standard wheelchair accessible unisex cubicle as users of facilities that

require adult changing provision report that they require extended time to use the facilities (Hanson *et al*, 2007).

4.8. The Good Loo Design Guide: extending accessible provision.

In addition to extending the design for standard toilet provision as presented above, the Centre for Accessible Environments(CAE) *'Good Loo Design Guide'* (Lacey 2004), also includes details on the design of toilets cubicles to be accessed by people who use wheelchairs.

The CAE's approach to toilet provision is user-centred and starts by considering the range of people who might stand to benefit from accessible toilet facilities. The guidance recommends that a needs assessment be carried out to assess the kinds of people who are likely to use the building or urban area. In addition, a holistic approach should be adopted that considers provision in the context of ancillary facilities such as baby changing area and people's everyday activities, which could peak at certain times of the day. The CAE guidance differentiates between generic needs and the needs of people with disabilities. Generic needs, that apply to everyone originate in the need to ensure privacy, comfort and safety whilst using the toilet. Other needs include:

- Sanitary disposal available in all female cubicles.
- Hot and cold running water supply to all wash hand basins.
- Adequate provision of soap.
- Adequate provision for hand drying.
- Lockable toilet tissue dispensers, preferably with a spare roll or pack of tissues.
- Adequate heating and lighting.
- An effective management and cleaning regime.

The CAE present approximate population estimates of users who require access and include; 5 million people over the age of 65 have a long standing illness, and 5000 working assistance dogs (who need to enter WC cubicles with their owners). Half a million people need to use a wheelchair for all or

part of the time, and 40,000 people in England and Wales who have profound and multiple learning disabilities and for whom an adult changing facility would make environments more accessible to them and their carers. The CAE also estimated that up to 4 million people, mostly men are affected by avoidant paruresis, and therefore current designs that include open urinals may not be suitable for them. The Guide stresses that the use of accessible provision is not restricted to people with disabilities, and includes the 3.3 million families who have children under the age of 5 years that may benefit from a more accessible environment.

Generally speaking the *Good Loo Design Guide* is in line with or extends that of the ADM 2004. However, the CAE do provide details on how people who use a wheelchair may transfer onto the WC pan therefore providing a visual guide as to why such space is needed within the cubicle as well as why the situation of fixtures and fittings is crucial to successful use of the facilities. The CAE guidance stresses that there is no 'one size fits all' solution to accessible toilet facilities but that individuals will have his or her own preference and that for a more general accessible environment this should be accommodated wherever possible.

4.9. The Bathroom

As discussed in chapter three, Alexander Kira's 1966 study (re-issued in 1976 to include design considerations for public washrooms and provision for older and disabled people), is still considered to be one of the most comprehensive ergonomic studies on design for human sanitation needs. Kira's work also included design dimensions for interior furnishing of the public toilet.

4.9.1. The Washbasin

Kira recommends a basin height of between 915 - 965mm with a distance between front and back of 380-430mm, and a minimum width of 305-380mm. The basin should have a single fountain type tap that delivers a splash free spray that also saves water, as well as shuts off after 45 seconds. The

minimum clearance of the water source to the back of the sink is 100-125 mm and the water should be tempered as users want neither hot nor cold water from these facilities. The need for privacy should also be extended to hand washing and grooming and therefore Kira suggests that each wash-basin should be clearly separated and placed at a distance of 815mm. There is no need for plugs and the basins can be self cleaning if the drain is not directly under the water stream so that water run off automatically cleans the basin. Soap should be liquid not bar, the dispenser should be located directly over the basin and operated with minimal contact.

Considering a washbasin that is accessible to older and disabled people Kira suggests the basin is set at 865-915mm, no more then 100mm deep and with a front to back dimension of 455-560mm. The guidance recognises that the space should be free of obstruction from water supply lines and heaters, and notes that conventional tap control maybe difficult for users to grasp, so recommends lever taps, although he suggests electronic push button taps may provide the 'maximum ease of use' (ibid, 1976;249) and recommends that the 'button' should be a minimum of 50mm[17].

4.9.2. The WC Pan

Kira suggest that the height of the then current WC pan, at 380-405 mm, is too low especially if no grab rails are installed. The WC pan should be installed near a wall so that grab rails can be securely mounted and that a space for a wheelchair is accommodated. The height of the WC pan should match the height of the wheelchair to create a smooth horizontal transfer. Kira also proposes a bidet be made essential but does not give dimensions or suggest where in the facility it should be placed. The toilet flush handle should be suitable for use by the elbow and storage for items such as gloves for self-evacuation, catheters, colostomy and urostomy bags should be in reach of the person seated on the WC pan. The needs of ambulatory men should be met

[17] It is of note that the recommendations for design to accommodate older and disabled people were specifically for domestic sanitary accommodation and did not extend to public provision.

with grab rails placed around the urinal. Unfortunately Kira does not consider the needs of ambulatory women by suggesting that grab rails also be installed within the female standard toilet cubicle. However, he does acknowledge that there needs to be more general planning considerations to overcome the architectural barriers of toilet provision and that these should include adequate space and sufficient door openings.

4.9.3. Hand drying

Kira presents three options for hand-drying; paper, air and cotton towels, suggesting that the latter are 'less satisfactory' for high use facilities. Air dryers are noted to not be powerful enough, not particularly liked by users and take too much time to use so to cause 'bottle necks' in facilities. Paper towels are considered the users' preference for their ease and multiple user use but are disliked by the hosts (providers) as they pose a maintenance problem with the need for bin provision and servicing. Kira found that there were usually few amenities for drying compared to basins for washing and that drying facilities were usually placed a distance away from the washbasins. Kira makes no note of hand drying specifications for older and disabled people.

4.9.4. Urinals

Kira describes the WC pan as a poor urinal due to 'splash back', which can soil the bowl and the floor but also notes the poor design of urinals, which soil the user. Analysis of the angle of male urine stream was found to vary considerably depending on how a man held his penis to urinate. This action, coupled with the design of the urinal and the distance between urinals, were found to cause different levels of soiling. Urinals designed to a width of between 535-610 mm were found to be inadequate for privacy during male urination. Evaluating the typical stance of a man when standing to urinate, estimated an average a space of 900mm was needed, and that dividers that started from the floor at a height of 510mm and with a minimum height of 1000mmm would ensure adequate privacy for users. The urinal flush presented a 'conflict of interest' (Kira, 1976) between the user and provider, in

which an automatic flush with no handling was the preference of users, but such sensor technology (at the time) was cost prohibitive for the provider. Kira's observation that *'the tendency of most agencies to base their design decisions on the lowest initial cost and their reluctance to provide anything beyond the minimum required by law'* (ibid,1976:232) still holds true for many toilet facilities today. Yet in contrast to Kira's timeless observation regarding provision costs, a design addition that now appears dated was his suggestion of incorporating an ashtray at the place of urination to avoid cigarette butts in the urinal.

4.9.5. Female Urination

Considering women's public toilets needs in regards to urination, Kira states *'unquestionably, one of the most serious unresolved problems of public facilities concerns the lack of suitable provision for female urination'* (ibid,1976:232). Noting the 'hover' phenomenon amongst women, he cites a survey carried out in Great Britain that found 96% of women do not sit down to urinate in public toilets. The consequence of the act of hovering, which Kira believes to be awkward and difficult to maintain, is that it soils the seat, the bowl and the floor. Such soiling also leads to a chain reaction in that our aversion to cleaning up someone else's mess, especially the body fluids of a stranger, means that the next user also hovers, exacerbating the mess.

In addition, Kira notes that women tend to postpone urination until absolutely needed, which he considers 'deplorable' and also adds to the problem of soiling due to the need to urinate urgently and therefore with haste and carelessness. Kira proposes that sitting on the toilet seat would prevent many of these issues, and suggests one of the reasons women do not sit is the fear of 'catching a social disease'. There are no attempts to dispel this fear as some form of myth – instead Kira gives it credence by suggesting that such fear is justified, describing a parasite known as *Trichomonas vaginalis* as transmittable from the toilet seat (as well as towels and sauna benches). Kira suggests that the open fronted WC seat would help to prevent such infection

as it reduces the risk of the vulva coming into direct contact with the toilet seat, yet states that such open fronted seats are disliked by many women. In addition he suggests that *Trichomonas vaginalis* can be caught from splash back through hovering. Yet no mention is made of a similar transmission through splash back encountered at the urinal.

Within the women's WC cubicle the size should accommodate taking off and putting on a coat and suggests dimensions of 915mm width by 1420mm depth, that adequate visual privacy should be designed in and that toilet paper, a sanitary bin, a coat hook and a safe place to put a bag should also be designed for. Kira notes that there is often a problem with the toilet flush in that it may be placed at an odd angle or ambiguous height, but does not make any recommendations. The lack of provision for a bag is considered an 'inexcusable' oversight in the women's toilets, as compared to men – every women will be carrying a bag.

4.10 The Inclusive Design of Public Toilets

Clara Greed author of The Inclusive Design Of Public Toilets (2003) has taken a planning approach to the issue. This can be considered a different approach to the design of the toilet cubicle being discussed in this chapter, however, it is important to assess Greed's contribution to the debate as the number of cubicles within public facilities and as such the space requirements is equally a planning concern.

Greed's proposals echo that of the earlier Women's Design Service in which large facilities are centrally located and supported by smaller facilities in local and less frequented areas. Greed calls this a 'toilet hierarchy' based on the needs of the larger community and potential users.

In addition to more generous space standards then current guidelines, Greed also lists a number of features of public toilet facilities that should be taken into account. She advocates that where Automatic Public Conveniences

(APC) are installed that they are done so to complement existing provision and not as a replacement of the toilet block. Greed recommends that flush handles should be of the automatic infra-red sensor type as this reduces hygiene concerns. In addition she recommends that wash hand basins be located outside the cubicle to prevent additional time spent in the cubicle as well as meet hygiene concerns. Where hand wash facilities are provided inside the cubicle, additional hand washing facilities should be also be provided outside for those who wish to wash their hands after existing the WC cubicle. Infra-red no touch taps are Greed's preferred design.

Greed notes that unisex toilet blocks that have door directly onto the street have been adopted by some local authorities as a way of reducing vandalism and other non-toileting behaviours. She considers this type of provision should only be considered as a last resort. Greed seeks to humanize the image of toilets by stressing their value to women, families and children opposed to their abuse through (mainly male) anti-social behaviour. According to Greed, toilet provision is a revenue generator for town centre managers and private providers alike. She also reviews the advantages and limitations of the APC, noting that these are unsuitable for and unpopular with some key user groups including women, children and older people. Although some APC's are marketed as accessible, they do not fall under the provisions of the British Standard or Building Regulations guidance and can be unsuitable for some disabled people.

Greed suggests that in order to design a better more inclusive environment toilet provision should well-designed, aesthetically pleasing, comfortable and user friendly. She suggests that user groups including those who represent women, families, the ageing population, disability, continence and ethnic communities have the potential to lobby for better toilet provision.

4.11. Population Demands and Design Solutions

Everybody who makes up the UK population will at some point in the day experience the need to excrete and hence access a toilet. A disability, either lifelong or temporary, and/or a chronic or acute health condition may make the access to toilets more frequent and more urgent. The biological process of ageing, even without additional health concerns, may require more frequent visits to the toilet. For many women lavatory use increases throughout their monthly cycle as well as through pregnancy. The first part of this thesis presents the experiencing body in terms of ageing, gender and ability, in an attempt to illustrate that not only does a one size fit all solution to public toilets fail to meet the biological experiences of the body throughout its lifespan, but also that other cultural experiences have to be considered. All too often each group is perceived in a static frame, one is an older women or a wheelchair user, when the reality is that an older women may also be a wheelchair user and a Muslim, who may also be helping to care for grandchildren.

Most of the publications relating to the design of toilets for public use reproduce the guidance given either in the British Standards or the Building Regulations. However, some authors augment these recommendations, which, ideally, should be taken as a minimum standard for provision. All too often, the regulations are read and implemented as the maximum form of provision and there is little attention amongst providers to the importance of detail for ensuring provision is accessible. This may, in some cases, be due to the providers of sanitary ware some of which may also not appreciate the importance of these details. For example figure 36 below is taken from a website offering ‘everything for the design and installation of your disabled toilet’ (UK Washroom, n.d) but has not considered the guidance on designing for the needs of mobility impaired users who may also experience forms of visual impairment. Yet, if designers and toilet and sanitary-ware providers do not scrupulously adhere to performance specifications, accessible toilets will not be accessible to the people for whom they are provided for in the first place.

Figure 36. Unisex accessible cubicle as advertised by UK Washroom

The 1990's saw the publication of many manuals on the design of accessible buildings. These were principally aimed to assist architects, designers and service providers in fulfilling their obligations in respect of the building regulations. Most of the design guides contained detailed specifications of the design of the accessible toilets (Holmes-Siedle,1996; Penton,1999; Adler,1999; Oxley,2002). Whilst the guidance in these manuals is not mandatory, they do serve to illustrate the complexity of additional factors that should be taken into account when specifying an accessible toilet. The range of guidance also illustrates that there is an element of dissent or even controversy as to the precise details of the specification.

The design complexity has been further complicated by the need for an access statement in new buildings. Access statements are required documents that are deposited with building control bodies along with building plans. Their requirement has led to a growth in the number of qualified access auditors, access committees and other expert bodies that advise on the inclusive design of a building. In response to their expert knowledge, many of these auditors and committees have issued their own guidelines to assist designers in making reasonable toilet provision (William Kweon Trust,1997; ITAAL,2001; Gateshead Access Panel,2003; PAMIS,2003; Manchester

Disabled Peoples Access Group,2003). It can be surmised that if anything, there is now too much information for designers, much of which differs in minor respects from the BS8300 and ADM 2004. It can be suggested that the prevalence of such guidance may give the impression that the users' voice has been represented and may preclude the continuation of the inclusive process that involves direct user consultation and collaboration.

With so much information, designers may have difficulty determining the most appropriate solution for the design of inclusive and accessible toilet accommodation. Differences between guidelines may also further confuse design options. For example, differences in guidance toward the height that should be specified for the rim of the toilet pan or toilet seat in the accessible cubicle. Holmes-Siedle (1996) suggests that the rim should be set at a height of 450mm above floor level. Penton (1999) recommends a rim height of 475mm and Oxley (2002) suggests a height of 480mm, which is the figure given in the regulations. Many ambulant disabled people need a WC seat that is even higher (Hanson *et al*, 2007), yet to implement this in the standard cubicle may make the toilet inaccessible to smaller people as well as children who use the cubicle with their parent. With some makes of WC pan, it may be necessary to include a pedestal to achieve a correct seat height, although it is important that the pedestal does not impeded access for a wheelchair user. Although wall hung WC pan may achieve a more desirable height, Holmes-Siedle (1996) reports that many disabled people feel 'insecure' with this solution.

Yet there is one area where markedly different opinions can have quite dramatic effects. This concerns the size and dimensions of the toilet cubicle itself. Other design features such as misplaced grab rails or inappropriate taps can usually be changed, but if the cubicle itself is not sufficiently spacious in the first place, in most circumstances, it may not be able to be enlarged due to the constraints of the overall building layout of which the toilet forms a small part, and therefore fails to meet access requirements.

On the other hand if the toilet is large enough to meet the needs of the user, it is highly likely that the detailed design features can be updated as products improve. The design life of many appliances, fixtures and fittings is approximately 3-5 years. However, the life of a building can be 30-60 years. In practice many buildings last even longer, and so space becomes a key constraint that needs to be sufficiently adaptable to adjust to rising standards, improved legislation and changing social attitudes that may emerge during the building's life.

The 1976 edition of 'Designing for the Disabled' set the template for the future BS5810 unisex accessible toilet (Goldsmith, 1976). Although hindsight caused Goldsmith to reflect that 'the idea of that it could be right for every disabled person was always absurd' (Ibid,1997:183), the introduction of the unisex cubicle was, at the time, promoted by disabled rights activists as an icon of access.

Goldsmith's original design was governed by the drainage infrastructure, located at the rear end of the cubicle as in a normal WC compartment. The depth was therefore 2000mm and the width 1500mm. This meant there was insufficient space for a wheelchair to turn resulting in the user having to enter facing forwards and exit backwards. This design also made it difficult for the user, especially those who used a wheelchair, to close the cubicle door. Again with hindsight, Goldsmith noted that it would have been better to turn the cubicle on its side, so that it would be the same depth as an ordinary compartment but with more space for the wheelchair to manoeuvre. However, he did not implement this change, and it is instructive and revealing to consider that the original design, which has subsequently not been challenged, was based on the incomplete appreciation of the limitations that the overall dimensions would impose on wheelchair users.

In the late 1990s the William Kweon Trust (1997) pointed out that the cubicle size specified in the building regulations does not allow for universal transfer

methods and so excludes a high proportion of potential wheelchair users. The group advocated a size of 2400mm long by 1900mm wide. Space also emerged as the dominant issue for the pressure group Is There An Accessible Loo (ITAAL), who complied a directory of accessible toilet facilities around the UK. ITAAL suggests that the current guidance for a standard corner cubicle of 1500mm by 2000mm is too small for power wheelchairs or someone who needs assistance and proposed that the space should be increased to 2000mm wide by 2500mm long.

The Gateshead Access Panel produced guidance that recommended an increased space of 2300 x 1500mm, and that these dimensions could be increased to 2500 x 2000mm where a hoist is installed.[18] This guidance also comments on the accessibility of the standard toilet cubicle, noting that these are often very small with an inward opening door that makes it very cramped even for non-disabled people. On the basis that all toilets should be accessible to as many people as possible, they advocate the widespread adoption of a compartment with a minimum dimension of 1500 x 800mm, complete with an outward opening door and accessible (easy to operate) locks and handles. Whilst the maximum in terms of space is important for people who use wheelchairs, it can be disorientating for people with visual impairments, and create feelings of insecurity for people with poor balance. Hence, it can only strengthen the argument that all toilets both standard and accessible should be designed along inclusive and accessible principles to accommodate the largest numbers of potential users.

4.12 Conclusion

In many ways the unisex accessible toilet cubicle is a tailored 'special needs' product that follows accepted inclusive design principles, and thus is justified on the grounds that all members of the public can access and use the facility. It is therefore ironic that more general members of the public should not

[18] Hoists are essential for some wheelchair users especially those whose carers are required to adhere to EU lifting regulations.

access this space. Originally conceived as a design for a ‘special needs’ solution that meets the needs of disabled people in the built environment, the wheelchair accessible toilet cubicle was intended as an alternative to mainstream provision, not as socially inclusive design. Moreover, whilst it is stressed that the technical specification as overviewed in this chapter, is critical in determining the accessibility and usability of the WC, it is also clear from the variability in dimensions that current specifications fails to cater adequately for this comparatively well researched user group.

The origin of the ‘unisex accessible toilet’ within the ‘special needs’ approach to design accounts for the fact that its layout and furnishings are tailored the needs of wheelchair users, therefore, the BS8300 and Part M cubicle cannot be relied on to cater for the needs of all disabled users. For example, users may prefer a unisex cubicle set apart from the male and female facilities for the general public, so that if necessary they can be accompanied to the toilet by a carer of the opposite gender. In contrast, other users feel that having a unisex compartment is in itself stigmatizing and embarrassing. These users would much prefer it if the ordinary sex segregated facilities were designed to accommodate their requirements.

Hanson (2004) notes that the inclusive design of a toilet for use in public superficially presents itself as a technical affair, in which the success of the design is primarily based on getting the specification right. Yet in practice, when the designer attempts to intervene in the process, the inclusive design of publicly accessible toilets reveals fundamental social processes that must also be taken into consideration. These processes not only regulate the relationships between wide varieties of user groups, but also cross boundaries governing wider social behaviours and what is considered acceptable and unacceptable.

The bulk of UK building stock is made up of older buildings, and Approved Document M (2004) applies only in the case of new buildings and alterations

to existing buildings. However, one important agent for change was the implementation of Part 3 of the Disability Discrimination Act (2004), that required the owners of existing buildings to make changes to their toilet provision and that these changes were then subject to the Building Regulations. The cumulative effect means that over time, the implementation of ADM should create a more accessible built environment, which includes the provision of more accessible toilets. However, the continued division in provision guidance between the able and disabled body will maintain the separation of provision and does not suggest that a fully inclusive built environment will be realised.

5. Theoretical Underpinnings and Methodological Strategy

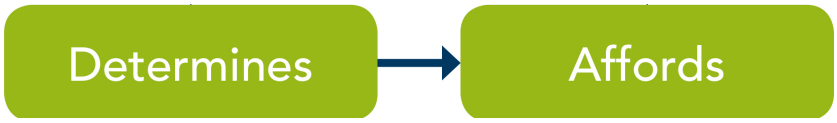

Figure 37. The shift between environmental determinism and bodily affordance.

5.1. Introduction.

Having explored the challenges of designing toilet facilities that are inclusive in previous chapters, this chapter outlines the theoretical approach of the thesis and presents a "cultural turn" from two collaborative research projects that make up the qualitative approach this thesis incorporates. The thesis proposes that architectural affordance as '*a conceptual framework to understand the relationship between built environments and humans over time, especially with respect to the form, function, and meaning of architectural elements'* (Maier et al, 2009:394) should be extended beyond the body's functional abilities and should also consider the experiences of the user. Set within the experience of using a publicly accessible toilet, the thesis so far has introduced the *body* as perceived by architectural design professionals, and presented evidence that the normative template in design should be reconsidered to include a range of physical characteristics that extend beyond the stereotypical image of disability as a user of a wheelchair. The thesis has also presented a review of current interior design guidance to highlight how current design templates created without reference to user experience can be considered to only offer the most basic of functions, erring on a 'one-size-fits-all' approach that in many cases fails to support the needs of bodies that do not conform to the normative architectural template of the toilet *environment*. Such design guidance also continues to separate provision by bodily difference, a reflection of the medical model of disability and engender not only 'a special needs' solution to toilet design and provision, but also present such discreet toilet provision as a barrier to inclusive design of the built environment.

The thesis will now present the theoretical underpinnings and methodological strategy that has been incorporated in the re-analysis of the primary data for the purpose of this research. This chapter will introduce the concept of the "cultural turn" and discuss how it has been executed in the secondary analysis of the original data to move away from a deterministic model and bring to the forefront the user experience, from the perspective of the affordance of the environment. It will describe the way data sets were generated for the two research projects, VivaCity 2020 and TACT3, and that have been revisited in this research. This will include what at the time was considered the latest ideas on how to conduct user-centred research, but also the limitations of those practices and the way these have been addressed by the current research in substituting the concept of determinism for that of affordance.

5.2. A Cultural Turn

The "cultural turn" manifested in the early 1980's in which a shift of emphasis towards meaning resulted in a turn away from positivist epistemology. This shift towards the study of culture has been most significant in the human sciences. Dikovitskaya (2005) describes how prior to the cultural turn there had been a dominant paradigm of social enquiry based on the model of natural sciences research, which *'did not question meaning or operation of social categories themselves, nor pay attention to individual motivation within social formation'* (ibid, 2005:48). Instead, social research was based on 'a common sense meaning' based on quantitative methods that often produced contradictory results including variances in different places, epochs and years. The result was that quantitative methods that were dependent on social categories began to fall into disrepute[1] (ibid, 2005).

The cultural turn shifted this emphasis to interpretative and contextual meaning, where research began to explore the cultural contexts in which

[1] It is interesting to note that the debate between quantitative and qualitative methods and its resulting data is reemerging in the era of digital 'big data' see Strong, 2013; Wiedemann, 2013.

groups or individuals acted. Here, *'subjectivity and the subjective role of social relations emerged as an important area of research'* (ibid, 2005:48). In addition to the attention focused on the subject, the cultural turn also recognised that research in itself could be 'contaminated by ideological preconceptions' (ibid, 2005:48), an insight that discredited the previous positivist paradigm that promoted a belief in the objective nature of social research. In short, it was recognised that research itself could be tainted by culture (social, economic, political), and be a product of culture (and based in the subjective position of the researcher) as opposed to a reflection of the culture under study.

Chaney (1994) notes that culture, and the study of it, is a concept that adheres to disciplinary distinctions, each of which will carry 'its own weight of associations'. Chaney surmises culture as *'tricky because it uses itself and it's own pre-suppositions in order to become meaningful'* (ibid, 1994:51). Considering the concept of space, Chaney suggests that the organisation of space *'by a community will display important values and structures of relationships in that community'* (ibid,1994:143). 'Specialists' who organise and produce space in postindustrial societies, architects and planners (with input from engineers and communications experts), as fellow actors in culture, create spaces within, between and around built forms that reflect the culture of their construction (ibid, 1994). Thus *'no space is innocent or devoid of meaning' and therefore the built environment is a natural object of social enquiry'* (ibid, 1994:143).

Zerlang (2004), notes a "cultural turn" having taken place in urban planning. This shift saw the work of the planner, established since the 1930's as 'grand master', shift from the *'functional shaping of the city for 'industrial man'* to, in the 1980's, becoming 'enabler' or 'choreographer' in which the inhabitants of the city are no longer recipients of grand planning schemes, but participants in the city plan's development. For Zerlang, the cultural turn in planning recognises; *'the individual in the information society with the aim of integrating*

the city dweller into the planning of a city whose foremost values and tasks are: information, integration and identity' (ibid, 2004:9).

5.3 Interdisciplinary Research

Interdisciplinary research has been described by the National Acadamies (2004) as; *'a mode of research by teams or individuals that integrates information, data techniques, tools, perspectives, concepts and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond a single discipline or area of research practice'* (National Academies, 2004:2)

It is now widely recognised, especially by UK research funding councils, that complex issues are not specifically located in a single discipline, but that an interdisciplinary approach is required to understand some of the key issues, such as climate change and an ageing population, that currently challenge society. Such interdisciplinary approaches have led to the formation of collaborative research studies in which a single issue is explored by a range of disciplines, based in a range of universities, from a range of methodological perspectives, and that incorporate a wide variety of methods in their research toolkit. This thesis draws on the data and findings produced from such two UK Research Council funded collaborative research projects. These are:

- 'VivaCity2020: Urban Sustainability for the Twenty-four Hour City': funded by the Engineering and Physical Sciences Research Council (EPSRC) from 2003-2008. (Grant Reference GR/518380/01) http://www.vivacity2020.org
- Tackling Ageing Continence through Theory, Tools and Technology TACT3: funded by the New Dynamics of Ageing (NDA) Programme[2]. (2009-2011 Grant Number RES-353-25-0010)

[2] The programme describes itself as 'a seven year multidisciplinary research initiative with the ultimate aim of improving quality of life of older people. The programme is a unique collaboration between five UK Research Councils and is the largest and most ambitious research programme on ageing ever mounted in the UK'. The five UK Research Councils funding the NDA programme are: Economic and Social Research Council (ESRC); Engineering and Physical Sciences Research Council (EPSRC); Arts and Humanities

http://people.brunel.ac.uk/~tact3/index.php

The author of this thesis was a key member of the VivaCity 2020 consortium project and, as the research fellow on the work package *'The Inclusive Design of Away From Home (Public) Toilets in City Centres'*, collaborated with the principal investigator in the design of the research tools (surveys and audit tools) and collected and analysed both the qualitative and quantitative data. The author's work on the TACT3 project was as a co-investigator and has focused on developing and implementing the work package *'Challenging Environmental Barriers to Continence'*. As co-investigator, the author has been responsible for the design of the qualitative research, supervising a design research associate and analysing the qualitative data. Both projects adopted an interdisciplinary framework, then considered the optimal way to carry out user centred studies in the built environment.

5.3.1. Defining quantitative and qualitative research methods for use in interdisciplinary research.

Denzin & Lincoln (2005) describe both qualitative and quantitative research of the human subject as 'scientific', adding that the activity of research provides the foundation of knowledge building, which contributes to the representation of the 'other'. A quantitative lens has come to be regarded as the 'gold standard' for scientific enquiry, based around the testing of a hypothesis, often in the science setting of the laboratory. It is considered objective, based on evidence collected through systematic and controlled observation, which allows replication to support or refute the hypothesis. Denzin and Lincoln (2005) offer a generic definition of qualitative research as *'a situated activity that locates the observer in the world*' and *'consists of a set of interpretative material practices that make the world visible'* (ibid, 2005:4). In short, researchers employing a qualitative approach study 'other' people and their interactions with their environment, offering an interpretation based on the

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Research Council (AHRC); Medical Research Council (MRC) and the Biotechnology and Biological Sciences Research Council (BBSRC) (New Dynamics of Ageing, 2014).

meanings that the focus of the study (people) has brought to the phenomena (such as the design of toilets) being investigated.

5.4 Locating historical fields.

Charting the historical emergence of qualitative research, Denzin & Lincoln (2008) demonstrate that methodological approaches and analysis of qualitative outputs have emerged through complex developments in the social sciences. In order to situate the practice of qualitative research, it is important to locate it within these historical fields as shown in figure 38. Identifying eight historical moments that define the methods and approaches used in the qualitative project, they highlight how each of these moments is framed by Guba & Lincoln's (2005) alternative enquiry paradigms.

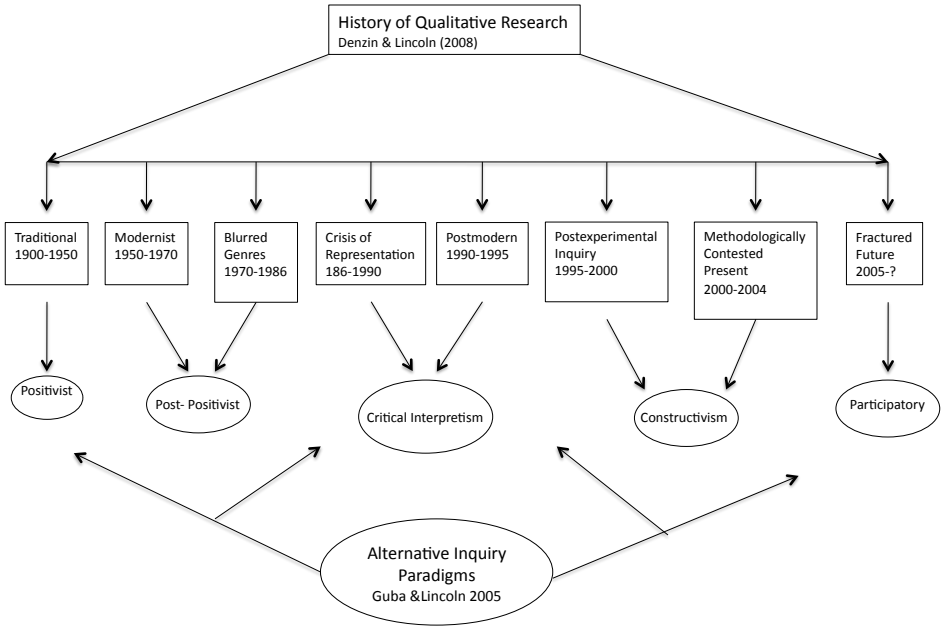

Figure 38. Eight historical moments of qualitative research adapted from Denzin & Lincoln (2008) that incorporate alternative inquiry paradigms adapted from Guba & Lincoln (2005)

The first phase of qualitative research is based around the works of the early ethnographers such as Malinowski and Mead, whose research outputs were considered 'objective' and provided a contribution to a 'science' of the 'other'.

This phase is largely framed by the positivist paradigm, which 'asserts that objective accounts of the real world can be given' (Denzin & Lincoln 2005: 27n3). The modernist phase built on the works of the traditional period, but incorporated new interpretive theories such as phenomenology and feminism. Such approaches would be extended into the blurred genres phase with the inclusion of neo Marxist and racial/ethnic theories, and the prevalence of the essay as interpretive text (Geertz,1988) replacing the scientific article. These two movements in qualitative research can be seen to be framed in a postpostivist paradigm which holds that 'only partially objective accounts of the world can be produced, for all methods for examining such accounts are flawed' (Denzin & Lincon 2005:27n3).

The crisis of representation and postmodern periods of qualitative research came about firstly with the introduction of reflexivity into research, thus issues of gender, race and class were brought to the forefront of research practice. By locating the researcher within the field, qualitative research challenged 'empirical science's hegemony' and provided qualitative research the platform on which to intervene in larger social concerns from economics to mass communication (Clough, 1998 cited in Denzin & Lincoln, 2005). The post modern period has also been identified as bringing about foundational shifts, a "cultural turn", in which questions about how research works, how meaning is made and what social purposes the research might serve, are posed. It also brought a shift in the techniques of research to address these questions, as researchers felt traditional approaches were not adequate (Finley, 2005). These two movements are framed by the critical interpretism paradigm, which set knowledge within specific historical, economical, racial and social infrastructures (Guba & Lincoln, 2005) including gender and ability.

The next decade of qualitative activity would bring about post experimental enquiry and the methodologically contested present phases of research. These have been identified by Denzin & Lincoln as further experiments with ethnographic texts as expressions of lived experience and which incorporated

autobiographical, multivoiced, conversational, critical and performative representations. These phases can be read as contributing to the constructivist interpretive paradigm, in which the focus is placed on community narratives themselves, subject to temporal and historical conditions but which serve as the foundation of knowledge about the community (Guba & Lincoln, 1995).

The eighth and current moment of qualitative research concerns the 'fractured future' (Denzin & Lincoln, 2008), in which a methodological backlash is noted (House, 2008). At the turn of the new millennium, there occurred a 'participatory shift' in which justice and democracy were intertwined; '*justice required giving stakeholders, particularly members of groups that had been excluded historically, an effective voice in defining their own needs and negotiating benefits*' (House, 2008; 633). Yet, such approaches have been curtailed by a 'neoconservative' shift towards 'evidence based' research, specifically targeted at the US education system, and measured by the same 'rigorous standards' as medical research (ibid, 2008). Hence the future of qualitative research appears to be drawing on the experimental models of the 1960s and delving back into a positivist interpretive paradigm (Denzil & Lincoln 2008).

By describing the eight movements of qualitative research, this chapter will illustrate how each of the methods considered here is framed by this shifting and overlapping history. In considering the history of qualitative methodologies, it should be emphasised that the end of one movement does not become the end of an allied research methodology, indeed the charting of this history attempts to highlight the richness of the qualitative method, and the many opportunities for wider engagement it offers design researchers.

5.5. Research Design

The research design of a qualitative project involves a 'clear focus' on the question and purpose of the research (Denzil & Lincoln, 2008:33). In turn, the

research design should also offer flexible guidelines that are connected to the theoretical paradigms that shape the chosen methods for collecting the empirical materials for the study. Bryman (2004) has categorised research designs that incorporate a mixed methodological approach (comprising qualitative and quantitative empirical material), as cross sectional, case study, longitudinal, experimental or comparative approaches. The data that forms the basis of this thesis was reanalysed to present a case study of users' experiences in accessing publicly available lavatories.

5.5.1. VivaCity 2020 : The Inclusive Design of 'Away from Home' (Public) Toilets in City Centres

The Inclusive Design of Away From Home (Public) Toilets in City Centres[3] work package took place over three years from September 2003 to August 2006. The research was guided by inclusive design principles (as discussed in chapter 2), which places people, as end users of toilet provision, at the centre of the design research. The involvement of users– especially people with disabilities, channeled the project to capture their experiences and recommendations in design tools that would afford architects, designers, planners, manufacturers and providers of toilets used when away from home, the opportunity to respond directly to user recommendations. In turn, the outputs of the research were also designed to be emancipatory, and could also be used by community groups to undertake their own research to make their specific case for toilet provision[4]. The timing of the project made it well placed to track the impact of the incoming Part III of the Disability Discrimination Act (as discussed in chapter 2). Ethical clearance for the study was given by University College London (UCL) on 2nd April 2004[5].

The principal objectives of the work package were:

[3] Due to the extended name of this project it will now be referenced throughout this chapter as the 'VivaCity 'toilets' project' or research.
[4] In 2009 the main output of the 'VivaCity toilets research', 'The Accessible Toilet Design Resource', was logged by UCL Download statistics as having 798 downloads ranking it number 14 in the universities downloads for that year http://discovery.ucl.ac.uk/past_stats/annual-2009.html#top50
[5] See Appendix 3 for details of the research steering committee.

- To develop a deep understanding of the issues and conflicts that impact on the design and infrastructure of 'away from home' toilets in city centres.
- To review and evaluate the impact of current knowledge, best practice and legislation.
- To understand the attitudes, perceptions, functional constraints and cultural and social requirements of all stakeholders in the process, especially the end-users of 'away from home' toilets.
- To draw up performance indicators and design standards that recognise, represent and include the views of end user groups.
- To develop an inclusive strategy for the design and maintenance of public toilets in city centres.

5.5.2. Methodology of the VivaCity 2020 Work package

To meet the project's objectives listed above, the research used a triangulation of research methodologies that generated rigorous quantitative data and descriptive qualitative accounts. Both the quantitative and qualitative data collection tools were required to be 'user-friendly'; so that they could be replicated by users to create their own community based accessible toilet research as detailed in the Accessible Toilet Design Resource (Hanson *et al*, 2007).

Multi-method research involves two or more sources of data capture, towards the exploration and investigation of one research question or a set of interlinked research questions (Bryman, 2004). Multi-method approaches are also known as mixed methods and are generally incorporated into a research design to avoid reliance on one method, which may lead to inferences and conclusions that are incorrect (Bryman, 2006).

A key principle of multi method research is triangulation, which ensures that a research project is not over reliant on a single method or measurement procedure (Bryman, 2006). Triangulation in the qualitative research frame has

been viewed by Denzin & Lincoln (2008) as a way of securing an '*in-depth understanding of the phenomenon in question'* as *'objective reality can never be captured'* and *'knowledge about phenomena is only created through its representations'* (ibid, 2008:7). Flick (2002) asserts that the combination of qualitative research data collected through *'multiple methodological practices, empirical materials, perspectives, and observers in a single study is best understood as a strategy that adds rigor, breadth, complexity, richness and depth to any inquiry'* (ibid, 2002 in Denzin & Lincoln, 2008:7). In turn, Denzin and Lincoln (2008) also locate triangulation as reliable methodology of traditional post-positive research[6].

As with the increase in collaborative research between distinct disciplines, Bryman (2006) comments that a mixed method and methodological approach, which utilises both qualitative and quantitative research has also become more prevalent, to the point that combining the approaches, whilst enhancing confidence in research findings, has become 'unexceptional and unremarkable' (ibid, 2006:97). It is noteworthy however, in contrast to Bryman's assertion on the prevalence of multi method research, Smith & Hodkinson (2008) assert that although there is an increased prominence of qualitative research, it has been seen to lack incorporating the rigor of a triangulation approach.

Dishman (2003) proposes that in the context of design research *'we have no choice but to use every method at our disposal to help us make an informed and empathic guess'* (ibid, 2003:47). Dishman suggests that whilst a multiple method approach in design research may appear as a 'mish-mash of methods' such wide incorporation of practices, especially to understand older users' needs, may provide a clearer understanding of future challenges in design, especially of products and services (ibid, 2003).

[6] Critiques of a triangulation approach suggest that it is open to 'multiple renderings and misrepresentations' (Atkinson & Delamont, 2008). Whilst, Richardson & St Pierre (2008) suggest that triangulation and its '3 sides' of research does not fully reflect the multifaceted nature of qualitative enquiry.

The principal qualitative methods used in the VivaCity Work package included:

- Semi-structured interviews (in-person and over the telephone)
- Focus groups

These methods were triangulated with quantitative approaches comprising:

- Surveys
- A Toilet Audit Tool

Hence the shape of the VivaCity work package would be as shown in figure 39:

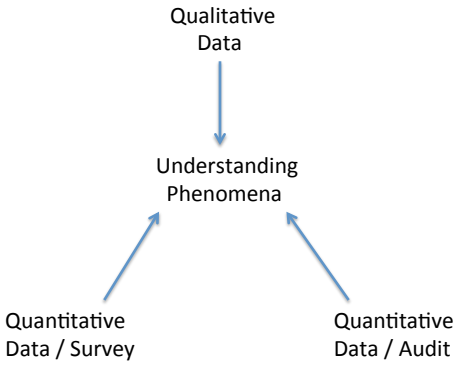

Figure 39. Triangulation of VivaCity 2020 Inclusive design of Away from Home (Public) Toilets in City Centres work package.

5.5.3. Qualitative Data Collection

The Interview is one of the primary methods of interacting with, and data gathering from human participants in research, and can be designed to generate both quantitative and qualitative data. Fontana and Frey (2008) note that the use of interview techniques across disciplines and methodologies, results in the technique being located in historical, political and contextual frames and therefore refutes any notion that the interview is a technique for *'gathering objective data to be used neutrally for scientific purposes'* (ibid, 2008:115). The perceived neutrality of the research interview may be couched in a larger 'scientific' discourse, as such interviewers should take an empathic

approach, in which they become a partner and even advocate of the participants (interviewees) and the wider study (ibid, 2008). The empathic approach may then generate results that contribute to policy building and contribute to 'ameliorate the conditions of the interviewee' (ibid, 2008).

The interviews for the VivaCity 2020 work package were designed to be an empathic exploration of design investigations that centred around the finding and using of an 'away from home' (public) toilet facility during the course of a day and/or night in the city centre'. The interview template was therefore semi-structured to allow research participants the opportunity to elaborate on the points they wished to make about how they of found and used a lavatory, drawing out those aspects of its design that were of greater interest to them. In turn, to ensure that qualitative data could be cross-referenced using a different data gathering method such as a focus group (see below), the same semi-structured template of questions was used for both methods.

The use of focus groups has often been derided in serious research due to their historical development in the service of market research (Morgan, 1996). After taking these historical roots into consideration Kamberelis & Dimitriadis (2005) still suggest that the focus group is an efficient 'instrument' of qualitative research that offers the opportunity to gather large quantities of data from large numbers of people in a short time frame (ibid,2005). Focus groups can also be used for wider political practice such as mobilising oppressed groups to work against their oppression through practice. Madriz (2000) highlights how focus groups beyond the sphere of market research, have been used to for consciousness raising and especially the promotion of social-justice agendas. Through the central component of the focus group method in decentering the researcher, focus groups offer a 'collective testimony' and have been recorded as being empowering, especially for women (Kamberelis & Dimitriadis, 2005:893).

Rabiee (2004) suggests that whilst focus groups maybe considered a quick way of gathering data, to ensure the success of such groups, time has to be taken in selecting members of the focus group, as some may find it 'natural' to participate in self-disclosure, whilst others may find this form of group engagement more difficult. Krueger (1994) suggests that groups should share similar characteristics such as gender, age range, ethnicity and/or social class background. Critiques of focus groups tend to arise from the medical sector, who argue that their use and subsequent analysis of data in medical based research has been superficial (Webb & Kavern, 2001) and inconclusive (Stycos, 1981).

Focus groups offered the 'VivaCity 2020 toilets' research the opportunity to record the experiences of research respondents, jointly, concerning the issue of physical access in relation to toilet design and provision. Focus groups were facilitated by one or more members of the research team. In contrast to the privacy of the one-to-one interview, focus group participants shared personal experiences with each other and the researchers. It may be suggested that this experience of sharing details of using lavatories was based on the collective group's experience, framed by the physical restrictions placed on them by the space – a sense that whilst their restricted ability (be it a disability or the care of another person) may make accessing the toilet 'different' for them, and through the focus group encounter they shared that difference together. Those participants who did choose the focus group method of contributing to the research were offered the opportunity to do so through gendered groups. Some groups, whilst not minding talking about such issues in front of acquaintances of their own gender, felt intimidated talking about issues in front of their opposite gendered support group member. Thus for some user groups, two focus groups divided by gender, took place.

5.5.4. Recruitment of research participants

Initially, the VivaCity 2020 work package aimed to recruit 100 people to participate in the research through a series of design themed focus groups.

This number was also deemed appropriate for the collection of proposed quantitative survey data. Recruitment for focus groups began in the winter of 2003.

Two key issues emerged in the recruitment of research participants. Firstly, on a practical level, the required number of people for participation in focus groups proved difficult to co-ordinate. The research was publicised through a leaflet campaign handed out at events as well as letters written to community and NHS supported patient groups[7]. Although a few responses were received these did not match the expected figures for a series of focus groups. Secondly, the recruitment of participants was focused on groups who had organised themselves around their disability. This wider community organisation can be suggested to have formed around a medical model of disability in which it is the disability that frames personhood.

Stiker (1999) applies a Foucaudian perspective to the issue of disability and personhood arguing that disability is constructed by discourses, but specifically medical discourses that focus on the abnormality of the body. Such constructions impact on those to which the discourse refers, but also touches upon wider beliefs and perceptions of science as the source of objective knowledge and 'truth', and especially the expert knowledge of medical science as a dominant form of knowledge about the body (Gabel & Peters,2004). Medical discourses concerning disability, are then embodied by those to whom it refers, who in turn apply and extend the discourse to themselves and those they physically identify with. Stiker (1999) therefore suggests that people with disabilities, (and those who support them) incorporate the power of medical knowledge within their own construction of personhood, and subsequently, the medical model of disability informs the perception of self and the wider community with which they identify.

[7] It must be stated that the National Health Service (NHS) no longer allows such solicitation of patient groups for the purpose of research in which the NHS is not involved.

The process of inclusive design where people are at the centre of the design process attempts to challenge stereotypes of disability and is often positioned as adhering to the social model of disability (discussed in chapter 2). Yet, often the recruitment of people for research participation is based on group organisation that is itself rooted in stereotypes of a specific medical condition. Such wider self-identity can be perceived as a reflection of community and social group organisation framed around medical discourse and medical models of and applied to the body. In this way, a project that intends to be radical, may inadvertently incorporate elements of the selfsame stereotypes that it sets out to challenge.

Difficulties in recruiting participants for research appears to have been overlooked in texts on the use of focus groups and interviews in qualitative research (Fontana and Frey, 2008; Kamberelis & Dimitriadis, 2005, Elwood & Martin, 2000). Hence it is important to re-situate the role of the researcher in wider society. Smith (1999) shows us that amongst some communities, the term 'research' is linked to European imperialism and especially to the worst 'excesses of colonialism' (ibid,1999:1). Denzin & Lincoln (2008) remind us that research is a metaphor for power and through the historical discourse that Smith cites, of the subjugation of the researched. In more practical terms, Ewing *et al* (2004) has found how instruments of citizen protection such as the Data Protection Act (1998) and research governance legislation have made the recruitment of participants in nursing and care studies more problematic. The failure to recruit adequate numbers for VivaCity focus groups led to some re-considerations concerning the main methods of data collection. The focus group method was expanded to include in-person and telephone interviews. Such re-considerations led to the development, by the author, of a novel participant recruitment method[8].

[8] See Appendix 3 for extended discussions on this method, personas, surveys and case studies.

The numbers and break down of method of participation are shown in table 11[9].

Method of Participation	Number of participants
Focus Group	129
Interview (in person)	56
Interview (telephone)	20
Total	**205**

Table 11. Number of participants for each qualitative method used in the VivaCity 2020 work package.

The promotion of the research through articles written for newsletters also resulted in the receipt of 38 pieces of written correspondence (letters and e-mails) from people who wished to contribute their experiences to the project but did not wish to participate in person. A single user group wished to participate but could not due to the nature of their condition. Users from the UK Parauresis (Shy Bladder) Support Group contacted the research requesting to take part. Due to the condition, in which talking about using toilet facilities can sometimes cause stress and anxiety, methods such as interviews and focus groups were not considered appropriate for this particular group. However, it was considered important that the design requirements of these users were captured by the project, so written information gathered by the Trustees of this user group was sent to the project.

5.5.5. Analysis of Interviews, Focus groups and Written Communications for VivaCity 2020

Interviews and focus groups were transcribed and then analysed using 'framework analysis' (Krueger, 1994), which is recognised as an analytic method suitable for both these data collecting techniques (Rabiee, 2004). Framework analysis requires the researcher to familiarise themselves with the interview and focus group output including any notes of observations of the group or interviewee. By immersion in the data, thematic frames begin to

[9] Does not include breakdown of participants who sent letters and e-mails N>38

emerge. The structure of the questions investigated in both interview and focus group sessions provided a systemic process of ordering responses. This was done by theming participants' references to design points concerning the physical environment of the toilet cubicle. The overriding narrative of the interviews and focus groups (what people like to do in the city and how access to toilets prevents or limits their use of public space), and the responses based on key themes were then built into personas. In order to present evidence-based research for the requirement of the funding council, this qualitative data was also quantified to stress the problems people experience with the current design of toilet provision. For example, qualitative data used in the personas was broken down into three areas of significance (table 12) that referred to the design, management and planning of the cubicle respectively.

Area of Significance	Design	Management	Planning
Participant References	315	182	12

Table 12. Quantitative breakdown of themes raised by participants.

5.5.6. A Quantitative Approach; Surveys

Surveys comprising 10 closed questions and one open enquiry (see Hanson *et el*, 2007) were carried out in 3 cities covering 6 locations; two in London (Westminster and Clerkenwell) and two locations each in Manchester and Sheffield city centres.

Respondents were requested to identify their sex and age band (from age 16-65 and over). In total 211 people completed the surveys. These comprised 87 men and 124 women. Responses were coded, logged into Excel and calculated into numerical data which could be amalgamated and separated by area to show regional, gender and age based responses (see Bichard & Hanson, 2009 for in depth discussion of the VivaCity street survey results). The street surveys were not intended to provide statistical evidence of UK toilet provision, rather they presented a snapshot of current provision options and user preferences and provided a launching point to better understand the

issues surrounding access to toilets in the areas where multiple case studies were to be conducted. The general nature of the questions presented two possibilities. Firstly, that the surveys could be used in the three cities explored for case studies and secondly that the structure of the surveys could be adopted by users, to form the basis of future community based toilet provision enquiries and research (Hanson *et al*, 2007).

5.5.7 A Quantitative Approach: Toilet Audit Tool

Sawyer & Bright (2007) propose that access audits can 'establish how well a particular building or environment performs in terms of access' (ibid,2007:8). They stress that access is assessed for all people including those with disabilities, and that any 'negative' results of an access audit can provide recommendations on where improvements can be made.

With regards to wider participation of people with disabilities, Sawyer & Bright (2007) report that there is a view that disabled people have first hand knowledge of disability requirements and therefore access audits should be carried out by disabled people. Contesting views hold that people with disabilities are individuals and that it should not be assumed that they have an in-depth knowledge of the complexity of disability as applied to the wider population (ibid, 2007). Thus a person with mobility impairment may not have an in-depth and experiential knowledge of the needs of a person with a sensory and/or cognitive impairment.

The timing of the research, taking place as Part 3 of the Disability Discrimination Act (DDA) came into force in October 2004, enabled the 'VivaCity toilets project' to capture a snapshot of toilet provision as it currently was and how the requirements of the DDA might be translated in terms of providing accessible toilets for members of the public. A specially developed Toilet Audit Tool captured these details of provision, and was designed in collaboration with Vin Goodwin, a National Registered Access Auditor (NRAA) and trained architect, whose work in assessing the built environment for

access helped ensure that the tool was correct, as well as accessible to non-professional users such as community-based researchers and campaigners. The tool drew directly from the specifications of the Unisex Accessible Cubicle as detailed in the Approved Document M of the Building Regulations (2004), which in turn had been developed from the British Standard BS8300 (2001). The VivaCity researchers and Goodwin identified 50 specific design features, which the tool was able to isolate and rank, and that should, in the design and layout of an accessible WC compartment, be taken into account. The Toilet Audit Tool was used in 101 accessible cubicles throughout England. The breakdown of toilets audited by area is shown in table 13.

Area	**No of Audits**
Clerkenwell, London	17
Westminster, London	8
Central London	10
Sheffield	17
Manchester	19
User Directed	30
Total	**101**

Table 13. Breakdown of Areas in which Toilet Audits were undertaken.

Through the application of the audit tool at these locations the 'VivaCity toilets' research identified a number of design failings of the accessible toilet cubicle. Of 101 accessible lavatories audited, not one was found to have followed the design guidance as laid out in the British Standards and Approved Document M of the Building Regulations (See Hanson *et al*, 2007; Bichard & Hanson, 2009)

Purpura (2003) who incorporated quantitative methods into the design of technology-based products suggests that the use of quantitative data can help inform practical decisions in the design process. Quantitative studies can help designers link attitudes to behaviour in ways that can inform design decisions by pin pointing details that may require intervention and improvement. Purpura stresses that a quantitative approach should not replace qualitative

methods in design research but can help inform the development of the design.

5.5.8. VivaCity 2020 summary

Using a triangulation methodology the VivaCity 2020 'Inclusive Design of Away From Home (Public) Toilets in City Centres' generated a large quantity of qualitative and quantitative data, which focused on the failures in the design and provision of current toilet facilities designed for people with disabilities. The quantification of this failure was based on the audited assessment of how the implementation of current guidelines, drawn up by the British Standards BS8300 and then incorporated in the Approved Document M of the Building Regulations, had failed to translate into the design of provision. Qualitative data was used to create 'personas', design tools that would represent the needs of users but not resort to stereotypes, especially of physical, sensory or cognitive experiences.

For the VivaCity 2020 work package a key aspect of the methodology was its quantitative approach and the robustness of the triangulation method in its ability to provide data that could be scored, ranked and measured. A key requirement of the project's funding council the Engineering and Physical Sciences Research Council (EPSRC), would be the incorporation of an interdisciplinary approach but with an output that included the production of evidence, based on a quantified approach, and therefore considered objective.

The development of the methodology as used in the VivaCity toilets project, as well as the field of study, would influence the development and subsequent research of the *Tackling Ageing Continence through Theory Tools and Technology* (TACT3) collaborative research project. TACT3 will now be discussed in the next part of this chapter.

5.6. TACT3 Tackling Ageing Continence through Theory Tools and Technology

The TACT3 collaborative research project was led by the Brunel Institute of Bioengineering and comprised eight research partners[10]. The project's research was focused on reducing;*'the impact of continence difficulties for older people by investigating continence services and environmental barriers to continence'.*

(New Dynamics of Ageing; TACT 3, 2014)

TACT3 was divided into four work packages, these focused on;

- Knowledge transfer of the research outputs.
- Interventions and services in relation to continence management.
- Assistive devices for continence management as requested by user groups.
- Exploring the environmental barriers people may face in their continence management.

The project's time frame was from November 2008-October 2011. Each institution's ethics committee gave ethical approval to undertaking the research with participants.

5.6.1. Challenging Environmental Barriers to Continence

The Work Package, *Challenging Environmental Barriers to Continence*[11] was designed directly in response to the 'VivaCity 2020 toilets' project, as the author/co-investigator stressed that it was important to incorporate and build upon the knowledge already gained regarding the study on the accessible cubicle, so as not to repeat it. In contrast to the focus of design and participation based on the design of the accessible cubicle and physical ability, 'TACT3's toilets project' focused on the design of the standard cubicle

[10] The TACT 3 partners are: Brunel University, The University of Sheffield, University of the West of England, Bristol Urological Institute, The University of Manchester, SmartLife Technology Ltd, Dalarna Research Institute and the Royal College Art Helen Hamlyn Centre.
[11] Due to the long title of this work package all future references to this phase of research will be under the term 'TACT3's toilets project'

and the physical barriers that are experienced there as people age. This focus was evidenced from the 'VivaCity 2020 toilets project' in which older participants described how they would not use the accessible toilet. For example, even though grab rails would offer support for conditions such as arthritis, respondents commented that they did not consider the provision was applicable to them as they did not consider themselves 'disabled', or their health condition to be 'that bad' so as to 'trespass' into the accessible cubicle.

The TACT3 toilets project was divided into three stages of research. Year one (October 2008- September 2009) involved participants as users of publicly available toilets. Year two (October 2009-September 2010) involved the providers of publically available toilets in response to the design desires of the research participants in year one, and year three (October 2010-September 2011) focused on participatory design work with users from years one and two.

The five principal objectives of the research were

- To gain an understanding of the strategies older people adopt, in continence management, when away from home.
- To implement findings from previous EPSRC funded research.
- To visualise current barriers in the built environment from the toilet user's perspective.
- To understand the demands of provision through the experience of toilet providers.
- To work with providers and older people in the development of key features of future public toilet design.

5.6.2. Extending Participation

The Challenging Environmental Barriers work package had initially designed its research programme for the participation of 10 men and 10 women aged over 50 to contribute in a participatory design focused project, based on in-depth qualitative engagement using recognised design research methods

such as visual data, diaries and cultural probes (Gaver *et al*, 1999). Such user led participation also involved having the users direct the areas to be researched in terms of the geography of provision, and directly identify the design issues on which the research should focus. However, in review this number of participants was considered too low by the review panel (consisting of representatives of all five UK research councils) who strongly recommended as a condition of funding, that the participant numbers be increased to at least 100 users. This effectively changed the level of user participation that could be managed by the research team, none of whom were working on the project full-time. The increase of participant numbers of people aged over 50, shifted the design of the project to one in which a larger number of participants could be incorporated. This was decided by the researchers to be achieved by restricting the user participation and decision making to the design and focus phases of the research, and instead holding a series of expert user panels (Coleman, 1994) based on the focus group method, but specifically addressing design. In addition the panel method would incorporate a number of visual design prompts, to ensure the methodology would be suitable for an ethnically diverse population. Crilly *et al* (2006) propose that the incorporation of visual design prompts is a useful method when involving people across cultures and who might not have English as a first language. The incorporation of a methodology that involved extending the numbers of users who participated, as opposed to focusing on the quality of user engagement, ensured that the TACT3 project was funded.

5.6.3. New Dynamics of Ageing Older People's Reference Group

In contrast to the VivaCity project advisory group, the New Dynamics of Ageing (NDA) research programme developed an Older People's Reference Group (OPRG) to overview and advise on all projects within the programme. The OPRG were involved in the NDA programme from its inception, commenting on review panels and attending major project meetings.

Having focused on developing expert user panels comprising people aged over 50 and involving degrees of participatory design activity, the TACT3 'toilets' work package, invited members of the OPRG to participate in and comment on the proposed research design, in effect to pilot the programme of the expert user panels. The OPRG entirely rejected the expert user panel format and the design prompts that the research had developed. They suggested that the work package shift the focus of the participation from people aged over 50 to incorporate the perspective and experiences of all ages. The participation and comments of the OPRG directed the 'TACT3 toilets' work package to re-design the programme of research to incorporate 100 people that represented all ages as well as re-thinking the method of user engagement.

5.6.4. From Ageing to Life Course

Considering a research design that could incorporate an increased participation and a wide age range, the author, as leader of the work package, decided to explore an epidemiological perspective known as a 'life course' approach.

A life course framework has become a major methodological perspective in epidemiology and Public Health studies, as well as in wider notions of health and well being (Ben-Shlomo and Kuh:2002). In contrast to more conventional epidemiological studies that recruit subjects in mid-life, a life course perspective offers a multi-disciplined approach that can illustrate how biological, behavioural and psychosocial pathways can 'operate across an individual's life course, as well as across generations, to influence the development of chronic diseases' (Ibid, 2002:285). Life course approaches have also been adopted by sociologists' to examine sociohistorical and biocultural contexts as well as by biological anthropologists to explore disease consequences, and has been presented as a powerful tool to test social interventions (ibid, 2002:291). Thus it can be surmised that the life course approach is based on biological and social factors that influence disease

experienced in adulthood through factors that are independent, cumulative and interactive.

Whilst the connections between urban design and public health are not new, Northridge et al (2003) propose that there has been a demise in considering the links between urban design, especially planning, and public health, and urge for a re-establishment of the historic link between the built environment and public health, especially when considering the impact of mega cities.

Considering a life course approach in the design and use of publicly available toilets presents a number of challenges. The 'TACT3 toilets' work package did not set out to create links between provision and continence; rather it assessed how the design of the toilet cubicle is a barrier to use throughout the life course. For example, parents have reported how young children experience difficulty getting onto the standard sized WC pan in a publicly available toilet. This is contrasted with the experience of older people, who report difficulties getting off the same sized WC pan. By identifying issues that are experienced across age groups in relation to the design of the toilet cubicle, the TACT3 work package set out to identify areas where new design briefs may offer interventions that are suitable across generations and can therefore be considered to be more suitable for the life course of the population.

5.6.5. Research Design

Incorporating a user-centred design model based on a 'lifecourse' approach resulted in major changes to the research design of the 'TACT3 toilets' research. To incorporate the perspectives of all potential users including those who are cared for (the very young and the very old), and the research time already used in re-thinking the research design[12], the author as co-

[12] In addition the original research associate employed on the project left after an extended period of absence. This required the research to begin the recruitment process again. In effect this left the TACT3 toilets work package nine months behind in its data-gathering phase.

investigator decided to focus on a triangulation methodology as successfully used in the VivaCity 2020 toilets project. However due to previous experiences on that project and the reduced timeframe for TACT3, it was decided to incorporate the method of structured telephone interviews for members of the public and semi-structured one-to-one interviews to record provider engagement. These methods would be supplemented with expert user workshops and the development of an audit tool for the standard toilet cubicle[13].

5.6.6. Structured Interviews

A call for interview participants to take part in structured interviews was placed in a number of on-line forums, through the TACT3 partners'[14] contacts, and on the suggested recommendations of the NDA OPRG. A 'snow balling' method was also incorporated in which interviewees were asked if they knew of anyone who might be interested in the research subject area and who might be the target age. As such the research was able to speak to parents about their experiences and the experiences of their children and also pass on detail about the research to their parents if they knew that issues relating to accessing toilets was also of concern to them.

Fontana & Frey (2008) describe the structured interview as one in which the interviewer asks the all the respondents the same pre-established questions that include a limited set of responses. This interview format provides very little flexibility or improvisation in the way that the question is asked, and therefore can restrict the answers of the respondents (ibid, 2008). Gordon (1998) describes interviewing as a skill that involves 'a high-order combination of observation, emphatic sensitivity, and intellectual judgement' (Ibid, 1998;7).

[13] After initial testing in the standard toilet cubicle, the Audit Tool methodology was abandoned due to the challenges of setting a fixed dimension in the standard toilet cubicle (as discussed in chapter 3).

[14] The partners of the TACT3 project included; Age Concern Barnsley, The Centre for Accessible Environments, Devices for Dignity, Age UK, Technology Sourcing, British Toilet Association, The Gut Trust, The National Trust, The Simon Foundation, The Relatives and Residents Association and the Women's Design Service.

However, as the interviews on the TACT3 toilets research were to be conducted by a design researcher who was not trained in qualitative research, or had extensive experience of interview techniques, the structured interview was considered the best method for the level of experience of the researcher, as well as the remaining time frame in which to conduct the research. Fontana & Frey (2008) propose that structured interviews are relatively untainted by the role of the interviewer due to the rigidity of its design, whilst Singleton & Straits (2002) recommend the structured interview as a robust data gathering method when research is driven by time constraints.

Structured interviews were conducted with 101 people of whom 11 also commented on the needs of someone they cared for. The age ranges of those discussed in interview ranged from zero (the needs of a new born child on a first outing with parents) to 101, the needs of a cared for mother and grandmother (Bichard and Knight, 2012).

The structured interviews took between 10-30 minutes and were recorded using Skype and voice-recording software. One interview was abandoned due to the respondent being unhappy at the lack of questions focusing on the needs of wheelchair users. Interviews were then transcribed and grouped together by question theme and analysed for complementary or conflicting references to design and provision management. This allowed the researchers to define - by age, specific design and management - issues as areas of convergence and/or conflict for users of publicly available toilets.

5.6.7. Semi-Structured Interviews

The key issues raised by the structured interviews with users were then used to design four personas, representing people with continence needs (Knight and Bichard, 2011) and used to frame the semi-structured interview with toilet providers and professionals associated with the delivery of provision. By interviewing providers and professionals (including architects, and cleaning services), the research aimed to identify why the needs of users may be

overlooked in provision. Interviews were conducted with 20 providers and professionals and lasted 30-45 minutes. Each interview was transcribed and thematically analysed for reference to issues that may be seen as converging or conflicting with those of the users.

5.6.8. Analysis of interviews with users and providers.

The thematic analysis of the interviews with users and providers aimed to identify issues that could be addressed by design, and the further development of a design prototype. The analysis revealed a primary need for information by the users concerning the operation and provision of toilet facilities. On the other hand, providers and professionals commented on the difficulty of providing information on provision that was seemingly always in flux, due to servicing, closures and the variability of businesses involved in community toilet schemes (see Knight and Bichard, 2011).

5.6.9. Fragmented provision equals fragmented information

During the course of the research a number of mobile phone applications had appeared that provided information on toilet provision. The research looked at these and found that current 'apps' were often unsuitable, either not listing all forms of provision (such as Automatic Public Toilets), or including facilities of businesses who were not part of community toilet schemes and wished to keep their facilities 'for customers only'. A case study of the London Borough of Wandsworth revealed that, as with the fragmented provision of toilets (Greed, 2003), the information was also fragmented between providers. Wandsworth council listed nine public toilets (all APCs), but the borough provided an additional 103 facilities. In total the provision included;

- 9 Automatic Public Conveniences.
- 10 in council buildings (in libraries and the Town Hall)
- 5 in parks and cemeteries
- 11 'Open London' members (a toilet scheme run by the Mayor of London) including shopping centres
- 3 in train stations

- 74 in shops, cafés, pubs and bars participating in the council's community toilet scheme.

Knight and Bichard (2011) found that it was confusing for users to know which business in which area would be part of the community toilet scheme and therefore feel able to enter toilets without making a purchase. This problem was compounded by the fact that in another area, the same business would not be part of the community toilet scheme and offered provision for customers only. The challenge for the design element of the research therefore focused on addressing this disjointed information in ways that could help both providers and users.

5.6.10. Using open data to map toilets

With no central data set on numbers of public toilets available in the UK, and with both providers and users recognising that information regarding location, opening times and access provision is essential for providing an efficient service for people managing continence concerns, the research team explored open data as a form of cataloguing information on toilet provision and the possibilities of using that information in digital maps. Open data is seen by the UK Government as affording greater transparency to local and national government services, and can be accessed and used by members of the public, for re-use and re-distribution. The research then set about collecting open data on public toilet provision from the 406 district, unitary authorities and borough councils in the UK, and began the development of The Great British Public Toilet Map http://greatbritishpublictoiletmap.rca.ac.uk/ to collate this information in a central digital location[15] (Knight and Bichard, 2011; Bichard and Knight, 2012).

[15] The Great British Public Toilet map went live in September 2011, but was predominantly London based due to the researches collaboration with The Greater London Authority in standardising the open data to be collected from London Borough Councils in time for the 2012 London Olympics. The research team was awarded further funding from the Nominet Trust to extend data collection through the Freedom of Information Act, and have now established over 6000 publicly accessible toilets throughout the UK, and is now the largest data base of UK publicly accessible toilet provision. The Great British Public Toilet Map will be relaunched in November 2014 on World Toilet Day.

5.6.11. TACT3 summary

The TACT3 toilets project aimed to extend the research of the 'VivaCity toilets' work in order to incorporate and contribute to this knowledge base. TACT3 sought to do so through a more in-depth participatory engagement, which was considered by the author/co-investigator to be more aligned to an industrial design approach (and the wider remit of the host research centre), as opposed to the architectural design focus of the VivaCity toilets project (itself a focus as part of the remit of this project's host research centre). However, the initial participatory methodology was rejected in review as being a 'tiny sample'[16] and therefore not appropriate to represent the needs of the ageing population. In contrast, the members of the OPRG directed the research to extend the age range of the work package's focus from the stand point that access to publicly accessible toilets was not merely a issue of ageing but one that is essential through out the life course. Despite attempts to assess the architectural barriers in toilet provision for an ageing population, the research, led by the participant's responses, found that information about provision was the key barrier to accessing toilets in the built environment. The research thus shifted from an architectural design problem to a service design response, and produced a web-based resource that could be regularly updated by toilet providers to provide the required information (including physical access) to users.

5.7. Secondary Analysis of VivaCity 2020 and TACT3 respondent data.

For the author as researcher and co investigator on two projects funded by RCUK (EPSRC and ESRC) focusing on the issue of publicly accessible toilet provision, there was a realisation that the findings were limited and very much structured to meet the 'objective' criteria required by the funders. The wealth

[16] Anonymised comments RES-353-25-0010 Referee C. 'Work package 2 (challenging environmental barriers) depends on tiny samples taking part in focus groups. People who suffer most from embarrassment and social isolation as a result of incontinence or mobility problems would be least likely to take part in this type of research, or be actively involved with charities and care groups. It is not clear how representative or generalisable the results from these studies will be, as opposed to reflecting the personal experiences of a very few individuals'.

of qualitative data gathered during the course of the two projects gave the author an impetus to give the users' experience greater prominence and to describe a variety of interactions with the environment, that all the while would be socially sanctioned by the design community.

Heaton (1998) outlines the use of secondary analysis of qualitative data sets of previous studies as providing an alternative perspective of the original work, and can involve single or multiple data sets, that have been produced by the researchers themselves or used for secondary analysis by independent analysts. Heaton identifies secondary analysis of data that combines data from two studies previously undertaken by Bloor and MacIntosh (1990) and Kirschbaum and Knafl (1996), but suggests that further work needs to be undertaken to develop the practice and realise the benefits.

Interest in secondary analysis of qualitative data has been gaining ground with the establishment by the ESRC of the *Qualidata* archive. This together with limited opportunities for primary research, and the costs associated with undertaking qualitative studies, have motivated researchers to re-evaluate existing data sets. The development of qualitative data analysis software has also offered more opportunities for deeper secondary analysis of data gathered from previous studies (Heaton, 1998).

Heaton advances that secondary analysis can generate new knowledge, new hypotheses, and reduce the burden placed on research respondents by recruitment for study participation. It also gives access for researchers to data that may originate from rare or inaccessible respondents. Heaton advocates four considerations that should be taken into account to decide if secondary analysis of data is suitable. These are:

- Compatibility of data with secondary analysis
- Position of secondary analyst
- Reporting of original and secondary analysis
- Ethical issues

These considerations will now be examined in response to the secondary analysis of the VivaCity and TACT3 data sets.

Firstly, Heaton notes that structured interviews may limit the range of responses for secondary analysis whilst, semi-structured interviews produce richer and more varied data. The interviews and focus groups for VivaCity 2020 were all semi-structured and lasted between 40-90 minutes. TACT3 interviews were structured and therefore only interviews lasting over 15 minutes were re-analysed. Secondly, secondary analysis requires access to the original data (Heaton, 1998). As researcher and co-investigator of the two projects the author has access to the original data. Thirdly, Heaton considers the reporting of the original and secondary analysis to be essential and to include the study design, methods and issues involved. The above gives details of the data collection process and outcomes of the original data analysis. Lastly, ethical issues must be presented. Both VivaCity and TACT3 gained signed informed consent from participants prior to their involvement in the research. Informed consent and information sheets were both presented to UCL and RCA research ethics committees as part of the process of ethical clearance. Data gathered from the VivaCity project, as funded by the EPSRC was not required to be logged with *Qualidata*. TACT3 research data was required to be logged and was accepted by *Qualidata* as a condition of ESRC funding.

5.8. From determinism to affordance.

The deterministic approach and focus on analysis of VivaCity 2020 and TACT3 as prescribed by RCUK funders, provided a ‘cause and effect’ model of research which obscured the real and variable experiences of the users. A secondary analysis of this data that focuses on the experiences of the users, may present designers working within the inclusive paradigm, useful evidence to identify pinch points in existing design outcomes that could be addressed.

The secondary analysis was performed using the theory of affordance (Gibson, 1979) to liberate the users' descriptions of what they actually did in the cubicle, as opposed to the more deterministic, socially sanctioned and acceptable practices reported in the previous studies.

5.9 Affordances

The concept of affordances as conceived by environmental psychologist J.J. Gibson (1979) has become a popular approach adopted in design disciplines including; spatial planning (Turner & Penn 2011), interface and product design (Gaver, 1991; McGrenere & Ho 2000) and architecture (Maier & Fadel, 2009; Maier *et al*, 2009). Gibson proposed that the affordance of an environment is what it offers the animal, what it *provides* or *furnishes,* either for positive or negative results (ibid; 1979:127- italics authors own). Gibson clarified the affordance as 'complimentary of the animal and the environment' (ibid; 1979;127) so that a surface that is flat, rigid and horizontal will afford support and is able to be stood on and walked on. For Gibson, the ground is considered to have four key elements; it is horizontal, flat, extended and rigid, and these elements are physical and unchanging. Yet the affordance of the support is relative to the animal so that the ground affords humans to stand and walk but does not afford fish to swim. In addition, Gibson notes that 'terrestrial surfaces' that are climbable can also afford falling off and be bumped into in relation to the animal that is using them, hence, 'different layouts afford different behaviours for different animals and different mechanical encounters' (ibid, 1979:128).

The use of the Gibson's affordance concept to consider the environment provides a general yet powerful way to understand environmental design settings. Surfaces afford posture, locomotion, collision, manipulation and general behaviour. Some environments are beneficial whilst some can be injurious. Therefore the affordance of the artifact / environment can have both positive and negative outcomes (Maier *et al*, 2009). Gibson stresses that there is only one environment, although it contains many inhabitants with

different opportunities for them to live in it, and argues that the environment has been altered by humans to afford them. It is not a new or artificial environment but one that has been modified by people, albeit one that Gibson perceives as being selfishly, wastefully and thoughtlessly modified. Gibson's definition of affordance can be seen as a 'descriptive formulation' that illustrates how an animal perceives the environment (Maier *et al*, 2009:395).

Drawing from Gibson's affordance perspective and considering Imrie's (2003) account of designers' perceptions of the able body, it is proposed that whilst there is only one environment, its affordances have mostly been manipulated by the able bodied for those considered similar to themselves, creating an environment that can be considered injurious to many other inhabitants whose bodies do not reflect their own.

Norman (1988) has extended the concept of affordance to one that is prescriptive to specific items, and therefore cannot be applied generally to all artifacts or wider architectural design (Maier *et al*, 2009). Maier *et al* suggest that this prescriptive approach results in *'two design-for-x methodologies (design for usability and design for error) but stops short of incorporating the concept of affordance as fundamental to the design of any artifact'* (ibid,2009:395).

Gaver (1991) suggests that 'affordances can provide a useful tool for user-centred analysis' (ibid, 1991:79). Gaver, whose research has focused on interaction design, was specifically referring to technologies, and introduced the sub-term 'nested affordances' to describe technologies as products within environments. The door handle provides a good example of a 'nested affordance' as by itself it is merely a disembodied, independent artifact, yet when attached to a door it affords the action of opening a door. Gaver (1991) proposes that affordances are inherently about significant properties and therefore it is important for architects and product designers to consider the concept of affordance.

Maier et al (2009) introduce two variations for reading affordance within architectural design; these are artifact-user affordances (AUA) and artifact-artifact affordances (AAA). AUA recognises a complimentary relationship between Gibson's description of the environment and the animal, within architecture this becomes the relationship between the built environment and the user. Here the affordance 'indicates the potential for a behavior, but not the actual occurrence of that behavior' (ibid,2009:397). Whilst the individual characteristics of the environment (flat, uneven, raised) or the user (age, ability) are not considered affordances themselves, when placed in relationship to each other will illustrate if a specific affordance exists, 'such as the ability of a specific person to walk on a specific floor' (ibid,2009:397) or a specific person to use a specific toilet cubicle. In contrast, Maier *et al* suggest that AAA is an unperceived affordance between multiple artifacts such as 'walls affording support to ceilings, sprinklers affording suppression of fires' (ibid,2009:397) and toilet cubicles affording excretion. Maier et al stress that AUA presents an affordance relationship that is '*directly* useful to users' whilst AAA presents an affordance relationship that is '*indirectly* useful to users'. 'Floors must support users walking on them, however, walls must support roofs, but this is ultimately to protect users within the building' (ibid,2009:398).

Within the environment of the toilet cubicle, (both standard and accessible) in which the configuration of spatial planning can be considered an artifact-artifact affordance (AAA), conjoined with layout and product design as an artifact-user affordance (AUA), it can also be suggested that service designers should equally be aware of the affordance of service delivery. Maier *et al* (2009) consider this third factor to be affordances and systems behaviour. They identify three categories as essential for the affordance relationship. Firstly, the structure of artifacts and/or users; secondly, behaviour and lastly purpose.

> *'The fundamental relation between these categories is that systems afford behaviors via their structure for a purpose…Structure determines*

what affordances exist. The affordances indicate what behaviors are possible, whether or not they are ever expressed. The ultimate usefulness of the affordance to users (directly in the case of AUA, or indirectly in the case of AAA) is the purpose of the system and its organization.' (ibid,2009:398).

This thesis expands the resulting behavioural outcomes of affordance within architectural design to consider how the design of the toilet cubicle affords the experience of excretion.

5.9.1. Secondary analysis through affordance

A secondary analysis of the qualitative data from the VivaCity 2020 and TACT3 projects was undertaken on 112 interviews and ten focus groups comprising 54 participants. The breakdown of the interviews by project and gender are shown in table 14[17]. A total of 166 participants' comments were re-analysed for this thesis.

Project	Method	Male	Female	Mixed	Total
VivaCity 2020	Interview	13	27		40
	Focus group		15	27	42
TACT3	Interview	28	44		72
	Focus Group	6	6		12
Totals		**47**	**92**	**27**	**166**

Table 14. Gender breakdown of data by project and method of data collection

The 166 participants represented a wide range of abilities and age ranges (table 15 below). Parents were interviewed regarding the toileting needs of their children and themselves. The oldest person whose data was included in the secondary analysis was aged 90. The mean age of all the participants is 48.68. The secondary analysis began by dividing participants who had identified themselves as being disabled into three groups. These were;

- A = disabled by accident
- B = disabled by birth

[17] The individual gender of all participants was not recorded in four of the VivaCity focus groups where participants were happy to be take part with people of the opposite gender.

- C= disabled by chronic illness

The categorising by accident, birth or chronic illness was aimed at shifting the respondent's narrative away from the medical perspective of their disability, and more towards experiential categories (see table 15 below)

Code	Pseudonym	Gender	Age	Disability	Accident	Birth	Chronic Illness	Mobility Aid	Type	Other
1	Fred	Male	61	Y			Polio	Y	Wheelchair	
2	Miles	Male	65	Y			Polio	Y	Wheelchair	
3	Richard	Male	72	Y			Polio	Y	Wheelchair	
4	Adrian	Male	55	Y			Chacot-Marie-Tooth Disease	Y	Wheelchair	
5	Colin	Male	81	Y	Spinal injury			Y	Walking aid (stick x1)	
6	Jack	Male	50	Y			Arthritis / incontinence	Y	Walking aid (stick x2)	
7	Alice	Female	32	N			IBS/RSI	N		
8	Dan	Male	46	N			IBS	N		
9	Sarah	Female	47	Y			Arthritis	Y	Walking aid (crutch x 2)	
10	Helen	Female	54	Y			Polio	Y	Walking aid (stick x1)	
11	Mary	Female	75	Y			Polio	Y	Walking aid (crutch/stick)	
12	Belinda	Female	62	Y			Arthritis	Y	Walking aid (stick x1)	
13	Nancy	Female	65	Y			Amputee	Y	Artificial Limb / Walking aid (stick x1)	
14	Jenny	Female	40	Y			Multiple Sclerosis	Y	Walking aid (stick x1)	

15	Betty	Female	56	Y			Multiple Sclerosis / Ehlers Danlos Syndrome	Y	Walking aid (stick x1)	
16	Sharon	Female	55	Y			Arthritis	Y	Walking aid (stick x2)	
17	Pat	Female	73	Y			Amputee	Y	Artificial Limb / Walking aid (stick x2)	
18	Abigail	Female	50	Y	Spinal injury			Y	Wheelchair	
19	Sally	Female	56	Y	Spinal injury			Y	Wheelchair	
20	Jean	Female	57	Y	Spinal injury			Y	Wheelchair	
21	Tara	Female	35	Y		Short stature		Y	mobility scooter	
22	Dr A	Female	80	Y		Fixed hip		Y	Walking aid (stick x1)? Rent wheelchair when out	
23	Craig	Male	50	Y		Visual Impairment		Y	Navigation cane	
24	Katherine	Female	21	Y		Freidrichs Ataxia		Y	Wheelchair	
25	Maria	Female	55	Y			Polio	Y	Wheelchair	
26	Jackie	Female	48	Y			Multiple Sclerosis	Y	Wheelchair	
27	Margo	Female	45	Y			Arthritis	Y	Walking aid (crutch x 2)	
28	Pam	Female	64	Y			Polio	Y	Wheelchair	
29	Marsha	Female	62	Y			Multiple Sclerosis	Y	Wheelchair	
30	Lisa	Female	48	N				N		Carer
31	Carla	Female	53	Y			Systemic Sclerosis, arthritis, lupus	Y	Wheelchair	
32	Glenda	Female	82	N			Arthritis	Y	Wheelchair	
33	Eileen	Female	67	Y			Polio	Y	Wheelchair	
34	Leah	Female	37	Y			Demylinating Poly Neuropathy	Y	Wheelchair	
35	Jessica	Female	60	Y			Polio	Y	Wheelchair	
36	Billy	Male	52	Y	Spinal injury			Y	Wheelchair	
37	Jeffrey	Male	43	Y	Spinal injury			Y	Wheelchair	
38	Philip	Male	52	Y	Spinal injury			Y	Wheelchair	
39	Ahmed	Male	59	N						
40	Joseph	Male	59	N						Carer
41	Evelyn	Female	1	N						
42	Joe and Jim	Male	2	N						
43	Lizzie	Female	3	N						
44	Oliver	Male	4	N						
45	Lucy	Female	5	N						
46	Charlie	Male	6	N						
47	Tracey & Eleanor	Female	7	N						
48	Madeleine	Female	8	N						
49	Morgan	Male	9	N						
50	Emma	Female	13	N						
51	David	Male	16	N						
52	Lou	Male	17	N						
53	Katerina	Female	19	N						
54	Susan	Female	20	N						
55	Rosa	Female	21	N						
56	Samantha	Female	22	N			IBS			
57	Angela	Female	23	N						
58	Judy	Female	24	N			IBS			
59	Robert	Male	25	N						
60	Camilla	Female	26	N						
61	Martin	Male	27	N						
62	Sophie	Female	28	N						
63	Steven	Male	29	N						
64	Jolene	Female	30	N						Pregnan
65	Danielle	Female	31	Y			Multiple Sclorosis			
66	Gavin	Male	32	Y			Multiple Sclorosis			
67	Claire	Female	33	N						
68	Matt	Male	34	N						
69	James	Male	36	N						
70	Lillian	Female	37	N						
71	Alexandria	Female	38	Y			Visual Impairment			
72	Tessa	Female	39	N						
73	Nigel	Male	40	N						
74	Nina	Female	41	N						
75	Bridget	Female	42	N						
76	Bob	Male	44	N						
77	Vicki	Female	45	N						
78	Sylvie	Female	46	N						
79	Gary	Male	49	N						
80	Sheryl	Female	50	N						
81	Mark	Male	51	N						
82	Faith	Female	52	Y			Multiple Sclorosis			
83	Leila	Female	53	N			Urinary Incontinence			
84	Juliet	Female	54	Y				Y	Wheelchair	
85	Prakesh	Male	55	N			Diabetes			
86	Shirley	Female	57	N						
87	Audrey	Female	58	Y			IBS			
88	Valery	Female	59	N			IBS			
89	Deborah	Female	60	N			IBS & Dieretics			
90	Terri	Female	61	N					Wheelchair	

91	Ivan	Male	62	N			Urinary Incontinence				
92	Alan	Male	63	N						Mobility scooter	
93	Stacey	Female	64	N							
94	Ivor	Male	67	N			Urinary Incontinence				
95	Pamir	Male	68	N			Diabetes				
96	Larry	Male	69	Y			Colostomy				
97	Max	Male	70	N							
98	Paul	Male	71	Y						Walking Aid (stick)	
99	Alana	Female	72	N							
100	Dr R	Male	73	Y						Walking Aid (crutch)	
101	Melissa	Female	74	N							
102	Janice	Female	75	N							
103	Lavinia	Female	76	Y				Y		Walking Aid (stick)	
104	Derek	Male	77	Y				Y		Walking Aid (stick)	
105	Prue	Female	78	Y				Y		Walking Aid (stick)	
106	Beverly	Female	79	Y				Y		Walking Aid (stick)	
107	Pauline	Female	81	N			Urinary Frequency				
108	Marcus	Male	82	N							
109	Emily	Female	83	N							
110	Josie	Female	84	Y				Y		Walking Aid (stick)	
111	Jacob	Male	89	N							
112	Diana	Female	90	N							
FG1 (6)	National Childbirth Trust	Female	Under 50	N							
FG2 (5)	Manchester BME group	Mixed		N							
FG3 (5)	Enfield Older Women	Female	Over 50	N							
FG4 (8)	Notting Arthritis support	Mixed	Over 50	Y			Arthritis				
FG5 (4)	Manchester Mums	Female	Under 40	N							
FG6 (8)	St Charles 6th Form College	Mixed	Under 21	N							
FG7 (6)	Pamis	Mixed		Mixed							Carer
FG8 (5)	Geezers Clut	Male	Over 60	Mixed							
FG9 (4)	Intimate Matters	Female	Over 50	Mixed							
FG10 (3)	Bangladeshi Community Group	Mixed	Mixed								

Table 15. Summary of participants by gender, age and disclosure of disability.

The 112 interviews and 10 focus group transcriptions produced a combined word count of 167,374, and 1958 direct quotes were identified as relating to the theme of affordance. The primary research questions had focused on 32 distinct design elements of the accessible and standard cubicle that respondents had difficulty using. These were drawn from and could be correlated back to the 50 design specifications of the Toilet Audit Tool (Hanson *et al*, 2007). For the secondary analysis, 28 of the 32 elements that were deemed to represent affordance were re-analysed to highlight how the toilet cubicle failed or succeeded in the action of finding and using a toilet.

Three distinct elements of affordance emerged as will be discussed in

chapters six, seven and eight[18]. These are shown in table 16 along with the corresponding number of references associated with each afforded action.

Affordance	**Respondent References**
Access	836
Urination and Defecation	218
Dignity, Confort, Safety & Security	624
Total	**1678**

Table 16. Respondent reference breakdown by affordance category

The references within the transcripts were identified through a 'cut-up' method (see below) in which interviews were read through and references to affordance themes identified and cut out of the hard copy transcript (figure 40). Having identified all of the responses that would be framed by 'affordance', the references were then re-themed into the 28 design elements (figure 41) and ordered by the narrative of the response (figure 42). This method was chosen, in preference to the use of qualitative software, due to the indirect terms of reference respondents might use in the description of the personal experience of toileting. By reading and re-reading the references, the author gained a deeper insight into how the design element being discussed was framed by the theoretical theme of affordance. The use of qualitative analysis software may not have identified such subtleties, as only on one occasion did a respondent directly refer to how the environment 'afforded' them.

[18] The initial theming of the data included a section on 'management' due to the PhD's initial direction to explore issues of service design. However, the deeper investigation to architectural affordance resulted in the 'management' data being re-themed based on the design context of the respondents reference to management. For example, references to cleaning were re-themed into the corresponding design item that was being cleaned. Unfortunately due to time pressures for completion of this thesis, the process of re-theming 'management' was not rigorously tracked and therefore it cannot clearly be identified how many of the 280 references were re-themed or discarded.

Figure 40. First stage of ‘cut up method identifying affordance context of interviews.

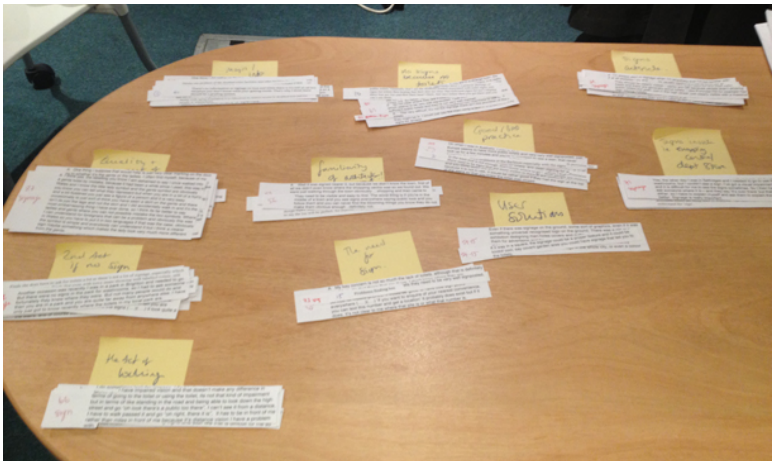

Figure 41. Second stage of cut up method identifying design elements to affordance.

Figure 42. Third stage of cut up method; ordering by narrative affordance themes.

5.9.2. Summary of affordance.

The secondary analysis of data for this thesis through the contextualization of finding and using a toilet through affordance, as well as liberating the respondents' descriptions away from the deterministic use of design features, also liberated the author to consider individual interactions with the environment as opposed to standardised ones. It also revealed deeper engagement of the users with the design features and highlighted the integral link of a designs affordance and nested affordance for the user.

5.10. From Response to Experience: The Experiential Method.

By conducting a secondary analysis of the data, the respondents' references shifted from their description of responses to the environment's functional elements to revealing their experiences of this environment. This analysis drew upon Kidd's 'Experiential Method' (2008) both in its method of physical interaction with the qualitative interview data (the cut-up method described above), and the organising of the data to refocus the interviews from responses to the environment to expressions of experience. Kidd suggests that this physical interaction with the data permits findings to emerge directly from what has been said and framed by the theory. Shifting the initial research focus on how the environment fails to meet the needs of the users, the focus for the secondary analysis of the data for this thesis asked 'what is the user's experience of using a publicly accessible toilet?'

The experiential method has three movements that comprise; firstly, the identification of 'experiential expressions' was undertaken in each transcript and then re-ordered into the 'emergent experiential themes' comprised of a contextual grouping or cluster of meaning that emerged through the individual responses. Secondly the process of 'thematic amplification' was undertaken in which the 'experiential themes' about the environment were re-ordered and themed together by their corresponding affordance. Lastly, a 'reflective synthesis' was undertaken in which the responses were further ordered to present a coherent narrative for use in this thesis. Kidd stresses that this last

movement is ‘not a move towards definition of a phenomenon but is an attempt to balance the polarities of structural and personalized meaning’ (ibid, 2012; 6). The undertaking of this method allowed for the qualitative data to be reframed from its initial focus in the VivaCity 2020 and TACT3 research, from the respondents’ responses to the environment to the respondent’s experience of the environment.

5.11. From case studies to personal narratives

This thesis also demonstrates an extension from the case studies of the original research undertaken in VivaCity 2020 and TACT3 to the incorporation of personal narratives. Stake (2005) proposes that case studies are a common approach in undertaking a qualitative enquiry, but stresses that it ‘is not a methodological choice but a choice of what is to be studied’ (ibid, 2005: 443). Qualitative research may know the term case study under a range of terms such as ‘fieldwork’, and case studies can be divided into a number of approaches including; intrinsic, instrumental and multiple studies (ibid, 2005). However, the use of triangulation within case studies is argued by Stake to give the research design the opportunity to concentrate on experiential knowledge, and the close influences of social and political contexts, as well as give credibility to the study.

Case studies offer the opportunity to identify further investigation and can aid the avoidance of generalisations concerning a research subject. It is important to emphasise that case studies do not represent the world but the case, the utility of which can communicate experience to other research practitioners and policy makers (Stake, 2005).

Zeisel (2006) suggests that case studies offer design research a holistic approach to a design inquiry. Zeisel cites a case study of an older people’s care environment in which a case study approach that incorporated multiple methods offered the design researchers deeper insights into the activities and

subsequent needs of the residents, which in turn informed and shaped subsequent design decisions.

Critiques of case studies tend to fall into a positivist and traditional scientific reasoning. Yin (1984) whose work focuses on the comparative case study approach, suggests that focused case studies can be unreliable as they cannot be replicated or repeated, and in contrast to Stake, suggests that case studies are not open to generalisation. Yet Zeisel (2006) suggests that the reading of case studies may support a more generalised perspective especially for design focused case studies of similar environments, such as hospitals and institutionalised environments where size, facilities, services and settings are similar.

The interpretation and representation of interviews as narrative reflects the 'narrative turn' as described by Barthes (1977) statement that *'narrative is present in every age, in every place in every society'* (ibid,1977:79). Chase (2008) describes contemporary narrative enquiry as; *'an amalgam of interdisciplinary analytic lenses, diverse disciplinary approaches and both traditional and innovative methods, all revolving around an interest in biographical particulars as narrated by the one who lived them'* (ibid,2008:651).

Chase describes five analytic lenses for researchers to consider when incorporating empirical material for use as narrative. Firstly, that narrative as a 'distinct form of discourse' involves 'retrospective meaning making', communicating the respondents', or as Chase describes the research participant 'narrator's' point of view. Secondly, narrative should be seen as a 'verbal action' that aims to do or 'accomplish something'. 'When someone tells a story, he or she shapes, constructs and performs the self, experience and reality' (ibid,2008:657). Chase urges researchers to treat the narrative as 'actively creative' and emphasise the narrator's voice, stating; *'when researchers treat narrative as actively creative… they move away from*

questions about the factual nature of the narrators statement. Instead they highlight the versions of self, reality and experience…' (ibid,2008:657). Thirdly, Chase reminds the researcher that the narrative will be both 'enabled and constrained' by the narrator's wider social contextualization including their locality, social stratification and 'cultural and historical locations'. Whilst acknowledging that every narrative is particular, this lens affords researchers the ability to explore similarities and differences across narratives created at different times and locations. Fourthly, Chase reminds researchers that narrative is 'socially situated', produced at a particular time and place and for a particular audience. Hence if that situation of the narrative encounter were to be changed, the narrative that might emerge maybe different. The fifth and final lens reminds researchers that they are also narrators in the development of the interpretations and presentation the narratives. As such, the lenses outlined above apply equally to the researched and the researcher. *'As narrators then, researchers develop meaning out of, and some sense of order in, the material they studied; they develop their own voice(s) as they construct others' voices and realities; they narrate "results" in ways that are both enabled and constrained by the social resources and circumstances embedded in their disciplines, cultures and historical moments; and they write and perform their work for particular audiences.'* (ibid,2008:657)

5.12 Conclusion

This chapter presents the thesis's 'cultural turn' through secondary analysis of two previous interdisciplinary studies in which the author was active. The cultural turn effectively shifted the emphasis of the data from a deterministic model in which the environment determined the actions of the users to one in which the users, through the context of affordance, experience the environment.

As Heaton (1998) suggests, the incorporation of secondary analysis requires the original research is reported to draw attention to the differences between the original studies and that of the secondary analysis. VivaCity 2020 and

TACT3 both highlighted deficiencies in current ‘away from home’ toilet provision, through interdisciplinary research that combined qualitative and quantitative methods, which although producing successful outcomes, failed to give voice to the 326 participants who took part through various qualitative methods, in both projects.

This thesis focuses on a qualitative approach and considers the historical tracing of the research method to demonstrate the shift, both in terms of the cultural turn but also to a more participatory encounter in research practice and as called for in inclusive design. The historical consideration also places the thesis within the current epoch in which a ‘return to positivism’ currently underlies the ‘fractured future’ of the qualitative method.

The secondary analysis of the data also draws attention to a shift from determinism to ‘affordance’ as conceived by Gibson (1979) and ‘nested affordances’ as presented by Gaver (1991). It also presents wider conceptual frameworks in which affordance relationships can be identified within artifact-user affordance (AUA) and artifact-artifact affordance.

The secondary analysis identified three key themes in which affordance was extended beyond functional action. These included;

- Affording access.
- Affording urination and defecation.
- Affording dignity, comfort, safety and security.

The analysis was conducted by use of a ‘cut-up’ method as outlined by Kidd’s (2008) ‘experiential method’. The use of this method and the incorporation of narrative into the secondary analysis shifted the previous research focus from a deterministic response to the environment to one of the participant / users experience of the environment, and will now be presented in detail in the next three chapters.

6. Affording access to the publicly accessible toilet

6.1. Applying affordance to access

The concept of Gibson's (1979) affordance, as applied to access, is the first in a series of chapters in this thesis that draw together respondents' bodily experiences and their narratives about using publicly accessible toilets, using affordance, what the environment offers the user, 'what it *provides* or *furnishes,* either for positive or negative results' (Gibson, 1979:127), as the main theoretical driver of what follows. The following three chapters are themed by what is being afforded, how the built environment is affording provision, and where the poor design of the built environment raises the environmental pressure (Lawton, 1974) due to poor design[1]. Informants recount their experiences and in an effort to move away from the medical model in which the informants are described based on their disability, they will instead be referred to by the categorisation illustrated in chapter 5, with reference to their experience of disability by accident (A); birth (B) or chronic illness (C).

When away from home and needing to use the toilet, the first task is finding the required facility. When research participants were asked '*what do you do when you need to find a toilet?'* they commented that their *'first instinct would be to look out for signs'* (Bangladeshi Community Group focus group). Orientating the body in the built environment is often performed through way finding, itself denoted by signage directing to features such as toilets. Orientating the body can therefore be considered the first stage in affording access to provision.

Knowing where to go to access toilet provision can also be considered a key aspect in the transport chain as discussed in chapter 3. The need to consider

[1] The following three chapters will also be illustrated with photographs from the researchers visual evidence taken between 2007 - 2014. However, these illustrations do not refer directly to the informants experience but are used to highlight where the experience was found in the toilet environment.

the journey to a toilet facility as a stage of a linked and whole journey (Evans and Shaw, 2009), in which being unable to locate provision, especially within the often tight time frame journeys are conducted in, is proposed to be a weak link in the chain. Finding one's way within a series of cues from the built environment can be considered crucial in strengthening this phase of the journey and subsequently the link in the transport chain.

Of the 166 participants drawn from both the VivaCity and TACT3 projects 71 (42.77%) declared they had a disability (61) and/or used a mobility aid (10)[2]. The break down is as follows:

Declaration of Disability or use of mobility aid per project:

VivaCity 54.88%

TACT3 30.95%

The gender breakdown of the 71 participants who declared disability and/or mobility aid use is as follows:

Female 59.15%

Male 29.58 %

There was a mixed group in the Vivacity data set in which gender breakdown was not recorded that comprised of eight participants (11.27%).

Of the 61 participants of both projects who explicitly declared a disability, their disability was then catergorised into the following themes of A, B, C, where A refers to respondents who were disabled by an accident, B refers to those who were born with disabilities and C refers to all those who are experiencing disability because of chronic illness. The breakdown of participants by this category is:

A = 11.48%

[2] These 10 participants contributed to the TACT 3 project in which the central questions concerned age and continence issues, and therefore whilst some information was taken about disability, it was self declared and did not form the key theme to the questions asked of the informants.

B = 8.2%

C = 80.32%

The use of these experiential categories aims to shift current design perspectives in which solutions focus on disability. Collapsing a range of different disabilities into these categories, and comparing the experiences of users across categories present evidence that people with different conditions experience similar problems with the design of toilet provision and the access it affords them. This suggests that future design solutions may need to cross bodily difference and afford greater access to the whole population.

In the following chapter, those participants who declared a disability or use of a mobility aid will be identified by the categories A, B or C. Participants from the TACT3 project, whose specific theme focused on age will be noted by their age, and thus presents how the many experiences of participants may be shared across varying degrees of ability and ages.

The chapter comprises two key themes. Firstly the journey through the built environment from the initial orientation of the body and finding ones way (Raubal and Worboys, 1999) to the movement through the environment and the barriers encountered from a 'whole journey' perspective (Evans and Shaw, 2009). Secondly, once the destination of the toilet provision has been reached the narrative focuses on how the cubicle may or may not afford use. Maier *et al* (2009) provide a useful framework of artifact-artifact affordances (AAA) and artifact-user-affordance (AUA) for designers to read the built environment and these will be incorporated within this chapter to highlight where users might find the provision of toilets indirectly useful and the furnishings within directly useful for affording wider access to provision.

6.2 Orientating the body - Way finding

The task of finding one's bearings within the built environment, especially one that is unfamiliar, is often carried out through seeking the correct signage.

Raubal and Worboys (1999) suggest that people use ‘image schemata’, the reoccurring mental patterns based on peoples’ experiences and the environments affordances, what the objects, assemblage of objects or the environment enables them to do to orientate themselves in the built environment for the process of way finding (ibid, 1999:2).

Barker (2002) notes that access to information is equally as important as access to the built environment. In addition, disabled people lack information regarding accessible transport options, finding out about schemes through word of mouth, via friends, relatives and care givers (Oxley and Gilleon,1995 cited in Atkins, 2001). Information can be given in a variety of formats, including telephone information, public access terminals, but also large print and Braille publications, recorded information and clear and understandable maps.

Oxley (2002) details specific provisions for signage, suggesting contrasting colours, font sizes, typeface, and the positioning of signs and information boards so that they can be located and used with ease. However, besides suggesting suitable placing of transport information, Oxley fails to suggest where in the built environment many other signs needed for information and way finding should be placed.

Appropriate information in appropriate formats and situated in logical and suitable places are matters that Barker (2002) and Greed (2003) emphasise as crucial to information and way finding for people with mobility impairments. Hesketh (2002) and Barker (2002) consider ease in way finding to be critical to the success of a transport journey, with good information and accurate signage providing swift and efficient movement through the built environment. Attention to detail in the design and language used in signs coupled with increased visibility can also offer disabled people a choice of routes that can be taken in safety, with independence, and with minimum stress, and so inspire confidence in movement through the built environment (Barker 2002).

For informants, locating signage generated 116 quotes, whose narratives followed three themes. These included; affording orientation through signage, alternative way finding and affording orientation through cues in the built environment.

6.2.1 Affording orientation through signage

In Manchester, Marsha and Lisa (C and carer) commented *'we're always looking for signage but never seem to see any*' and in the South East, Steven recalled *'its not clear where they [signs] are if they [toilets] are there'*. For many informants the act of looking for signs reflected the availability of provision, Leila commented that *'it's not the signage, it's that there isn't the provision of toilets'*. Samantha felt that it was the toilets that;

> *'need to be visible and easy to find. The worst thing is if you're in the middle of town and you see signs everywhere saying public loos and you follow then and you can never find the blooming things you know they do not make them obvious enough'.*

For Leila the lack of signage made her feel *'anxious'* and resulted in her spending *'a lot of time looking for toilets'*. For Faith (C), signage not only gave directional information but also offered *'reassurance that there was a toilet nearby'*.

The lack of signage became a particular problem when informants were not in a familiar area;

> *'…again I say the lack of provision, especially if you are in a strange town, the signage isn't always very good. If you really have to go in a hurry, it is really not very good to have to start asking…'* (Sheryl).

For some informants the issue of signage became more problematic. Craig (B) described how *'as I can't see signage I have to go and ask which is a bit embarrassing'*, whereas Gavin (B) described how orientating the body found him;

'… standing in the road and being able to look down the street and go 'oh look there's a public loo' there', I can't see it from a distance, I have to walk past it and go 'oh right that's where it is… it's actually about spotting street signs and reading signs and stuff like that is difficult for me'.

Informants discussed how signage pointing to provision that no longer existed was particularly troubling. 71-year-old Paul told of *'a sign in Redbridge that points to a toilet but the toilet was closed recently ... but no one thought of taking the toilet sign down'*. Leila (C) said *'often you see a sign and your spirits will be raised and then you can't find it'*.

For some informants, the experience of signage was based on the quality and positioning of the signage itself. Judy (C) described signage as *'badly placed, you just have to know where loos are'*. For Dan (C) who requires access to toilets urgently, the combination of signage could be confusing, *'you follow and still can't find, you feel like your chasing round'*. Informants highlighted the type of signage as being especially problematic. Finger post signs came in for particular criticism. Jack found that *'the tops of poles get swung in the wrong direction'*, whilst Vicki felt that *'the arrow gets turned around by lets say naughty children'*. Betty and Maria who both used wheelchairs found that finger post signs were difficult to read, as they were *'very high up'* or *'too high'*.

Informants who required accessible facilities found that where signage did exist it would often not include key information such as if an accessible facility was also provided. Although the DDA specifies that where there is toilet provision this should also include accessible facilities (namely a BS8300 cubicle), informants often did not 'trust' that such provision would be there or itself be accessible. Helen (C) commented that;

'generally you don't see the disabled symbol associated with toilet signs, just signs for toilets and then your hoping there's a disabled loo.

I've followed signs for toilets and when you get there you can't use them'.

Nottingham Arthritis focus group (NAfg)[3] echoed Helen's experience stating,

'there's no signage or the signs just say 'toilets' and don't indicate if they are accessible so you get there and there's no accessible loo and it can be a fair trek to get there'.

Sarah (C) commented that she *'doesn't see signs for disabled toilets, you may see a sign for toilets but there may or may not be a disabled facility and if there is it will probably be locked*'.

The consequences of poor signage can often be quite upsetting. Sophie told of trying to follow signs to toilets in an unfamiliar area whilst caring for an elderly relative;

'you look for signs and you look and look and you go 'oh there it is' and it took a long time to get there… about 10 minutes to find the place and by the time we got there she had wet herself. She didn't say much, I think she was really embarrassed to be in this situation. The only thing we could do was call somebody and get home because it really was a situation where she couldn't continue walking around like that'.

Yet, signage denoting who has right of access to the provision can also be confusing when the facility itself has been located. The Manchester Black and Minority Ethnic (MBMEfg)[4] focus group found that the signage for male and female provision could sometimes be very similar and prompt access into the *'wrong'* facility, especially if the user was in a hurry. 78-year-old Pat found that *'sometimes I have to look at the male and female [signs] to see which is male and female [toilets]'*, and Abdullah found that gender designation signs were *'confusing'*, and that it *'could get worse if my vision deteriorated'*. Gavin (B)

[3] Herein referenced as NAfg
[4] Herein referred to as MBMEfg

found that because of his *'visual thing'* he had to *'go right up to the ladies sign'* to see that it's not for him. NAfg made a similar comment;

> *'sometimes the signs are deceiving… there's not clear signage between the men's and the women's loos – it's only from knowing [that specific facility] that you know which one to use – it could be embarrassing for strangers'.*

Some informants experienced such *'embarrassment'*. Gavin (B) admitted that he had in the past *'just walked in'* to the ladies provision. He considered it *'stupid really'* but that it was *'socially embarrassing'*. Audrey (C) recalled that she was *'ashamed to say I walked into a Gents by mistake'*, on not being able to discern the signs and being in a bit of *'a fluster'*, she *'accidentally walked in'*, adding *'it's the most embarrassing thing I have ever done'*. Glenda (C) also told how she went into the Gents by accident, where a man told her she was *'in the wrong one'*. Glenda was so horrified by the experience that she complained to the council asking *'can't you spare anyone to put up a sign on the ladies – but the attitude of the council was that there was no-one to put up a sign'*. Here we see that signage affords not only access to locating the facilities but also determining the correct provision as assigned by gender.

Signage contributes to affording the orientation of the body in the built environment. In regards to the provision of toilets, the lack of signage is often perceived as a lack of provision. In many areas of the UK in which Community Toilet Schemes are in place, this way finding oversight contributes to the perception that there is no provision, when in many cases, there is, albeit within the private sector.

Where signage does exist, the information it conveys is equally important, whether for accessible and/or correct gendered provision. Norman (1988) has proposed that for the design of everyday things people do not need complete information. However, in the case of signage information for way finding, more

and precise information will ensure provision is identified for access and as currently socially sanctioned, correct gender use.

6.2.2 Alternative way finding

When faced with no signage many informants, especially when in an unfamiliar area, resort to asking if there is toilet provision and directions to the facilities. Pauline aged 81 said, *'I always ask someone, go into a shop and ask, there's not going to be signs in the road'*. 75 year old Janice said *'I tend to ask, depends on the locality, I might sometimes ask people in the street or I would go into somewhere and ask where they [toilets] are'*. Some people tend to ask people whom they consider similar to themselves. Mary aged 74 said, *'I ask another pensioner in the street… I'd think they would be more likely to have the same needs as me so they would be more likely to know'*, and a member of the Bangladeshi Community Group commented *'I always look for signs first, and if I can't find any then I will go to the local Bengali shops or sari shops'*. Pamir stated that he couldn't find any toilets *'there are no signs, I ask many people if there are any public toilets and nobody know, no we don't know'*.

The decision to ask directions from people similar to the self maybe based on poor information from strangers who mean well, Samantha and Rosa found that sometimes information might not be correct and *'the worst thing is wandering around and being misled'*. Sylvie echoed this, *'I might ask someone but knowing how rare it is that they'd be open you can find yourself being sent for miles and showing up and them not being open'*. For Camilla and Janice even asking *'officials'* associated in the area proved unsatisfactory to finding facilities. Camilla said *'I asked the station master at London Bridge where there was one and he didn't know'*. Janice told of a visit to Greenwich, a national heritage site in South East London, when on arrival and needing to use the lavatory;

> *'went into the info centre and said 'can you tell me where your loos are, there are no signs' and she said 'no we don't put up signs we don't*

want people to use the loo', and I said 'well why not' she said 'well we only have one and we don't want it overwhelmed with people…'

6.2.3. Affording orientation through cues in the built environment.

In the absence of clear signage or any directional indicators at all, many informants read the wider built environment, taking their cue from familiar aspects of city. 19 year old Katerina told how whilst visiting an unfamiliar town *'we were just walking through town and then came to the shopping centre and thought there would be a toilet there'*. Jenny (C) told how she doesn't even *'look for information on toilets'*, just *'find the nearest department store'*. Susan and Rosa commented that if they were *'looking for a toilet'* they would *'automatically look for a shopping centre'*. Pamir stated that *'I look for a store, I know there must be toilets somewhere'*. Jeffrey (A), a wheelchair user stated that an *'experienced disabled person instinctively knows where to find the loo, department stores, newer buildings...'.*

Faced with a lack of signage for toilet provision, people rely on two key processes described by Raubal and Woboys (1999) as image schemata, the recurring mental patterns drawn from experience and the affordances the environment provides, such as signage or if none, cues in the built environment. However, a third process may also take place in verbal information. Within this study the majority of informants who asked for verbal directions were female. This correlates to studies that have identified gender differentiation in way finding and the strategies used, with men less likely to ask for directions (Lawton, 1994).

For some respondents signage within the enclosed space of the department store or shopping centre became problematic. Adrian (A) found that there was a lack of standardization between stores of the same company so that there will be signage in one store but not another (of the same brand). Jackie (C) echoed this;

'shopping centres are pretty good - it's the shops themselves, you've always got to ask if there is one or where it is, it's never clearly marked. M&S is a good example, at my local branch you would never know there's a toilet there'.

Ivan (C) found that it often took a long time to find the toilet in a department store,

'there maybe a sign on the escalator saying it's on the third floor but when you get to the third floor you have to ask a least two assistants before you can find it because it's usually tucked away in a corner, hidden somewhere'.

Danielle also commented on her experience of looking for toilets in department stores where she ended up *'walking in circles trying to find where the toilets are, which doesn't help when you need to get there quickly'*.

The key problem within department store provision is that informants know the toilets are there, they just have problems finding them. This can be especially frustrating for people who need the toilet in a hurry. Dan found;

'department stores can be a problem as you can't always see the signs for loos and then they tend to be on the top floor at the back, just trying to find them can lead to accidents. Its embarrassing and sometimes I panic'.

The difficulty with signage within the enclosed space of the shopping centre or department store often leads to people also having to ask for directions to facilities. Managing his urinary incontinence, Ivan said *'you have to find an assistant pretty quickly and hope that they know where it is'*. Pamir told how he *'ask(s) someone. You do see signs but it's better to ask someone and they can quickly tell you 'go to the third floor, use the lift'*. However, asking someone can sometimes not counter the problem of a lack of signage. Alexandria who has a visual impairment describes how she *'goes and asks*

someone and they say 'its over there' but that's no help either, so I have to explain myself and ask then to explain the directions better'.

6.2.4. Orientating the body summary

Janice, aged 75 pleads *'we need more obvious signage please'*. Yet, in design language, the need for signs or notices often signifies the failure of design. Norman (1988), borrowing from Gibson's affordances, posited that if instructions are needed then the design has failed. If we consider the city as an artifact of human design then can we consider that the need for signage to point out toilet provision is a failure of the city's designers? However, the city's design has not always been this way. The era of Victorian philanthropic public convenience design ensured they were placed in highly visible locations (albeit the facilities themselves hidden through subterranean design), identifiable by the architecture itself. In today's city, the lack of signage has resulted in informants reading the environment to identify the architecture (often the commercial environment of the department store or shopping centre) where toilets they can access might be, yet they are often further confused by the placing of toilets within the architectural space, and a lack of, hidden or confusing directional signage within the built environment, often resorting to using the tacit knowledge they hold of the environment and a buildings association with 'probably' having provision.

The diversity of the informants' experiences related here suggest that able and disabled people of all ages have difficulty orientating their bodies in the built environment due to problems with signage, either through the lack of signs or poor quality signage that displays either incorrect or confusing information (such as clear gender designation of facilities).

6.3 Navigating the Environment; the journey to the facility

Once informants identified where toilet provision is located, they then described the journey to the facilities. Here the affordance of the immediate environment is found in the navigation and the journey to the toilet, and

reflects on wider accessibility in the built environment as discussed in chapter 3. Considering human pedestrian behaviour, Turner & Penn (2002) suggest that the built environment could be regarded 'as a provider of possibilities rather than as a place to be rationalised'. Yet, if such possibilities are hindered by features that are inaccessible for some users, then the possibility of exploring what Turner & Penn describe as the 'walkable surface' may offer more possibilities for one group of pedestrians than another, namely those considered able in contrast with those whose mobility maybe impaired.

Evans & Shaw (2009) suggest that when making a journey 'we do not differentiate between the elements of the journey but on their perception of the whole journey' (ibid, 2009:2). In addition, many aspects of the built environment that may present barriers to access, have from an accessible design perspective, focused on individual elements such as the entrance to buildings or dropped curbs, and not on the whole journey such as if the user reached the destination (ibid, 2009).

Considering navigation and the journey to the lavatory, informants generated 71 quotes. The narrative comprised three themes of; siting, the journey and the experience of barriers on the journey.

6.3.1. Siting in the wider built environment.

The seeming scarcity of toilet provision within the city, signified by inadequate signage, often results in time taken to find and then reach the facilities. Considering where publicly accessible toilets are situated in the built environment, teenager Katerina commented, *'I feel it's important that they are positioned in good places… you might have to walk 10 minutes to get there or you might not want to go to that part of town'*. Fellow teens David & Lou felt that *'its got to be easy to get to, and umm like where a lot of people can access it at once so its you know, it has the most use'*. At the other end of the age scale 82-year-old Marcus told of how, by the time he'd got out of a shop and started making his way to toilets, the distance had been too far for him to

reach the facilities in time, *'you won't believe me but I have spoilt so many times my clothes'*.

6.3.2. The journey to the lavatory

Considering that there might be an immediate journey in itself to the toilet, many users commented on their navigation to the facility. Here we see that additional environmental factors add to the affordance of the navigation, for example Colin (A) who uses a wheelchair comments that *'the need for good unobstructed access to the toilet is very important'*. Jackie (C) commented that;

> *'even though some businesses are complying with the DDA, it has not been thought out clearly… whilst toilet is ok, it's down a narrow passageway and that passageway was blocked by equipment'*.

Juliet, who considers herself able bodied but has urinary urgency also found blocked routes a problem. Reflecting on café provision in London's Hyde Park she commented; *'you have got to squeeze past tables and chairs and then open a door to get into the lobby area and then find the door to the toilet area, that's just not a great set up'*.

Nancy (C), who uses a walking aid finds;

> *'some accessible toilets are not in very accessible places, there's stiff swing doors, narrow passageways with sharp turns. It's ok for me as I can walk but it must be very difficult for people in wheelchairs'*.

While wheelchair user Billy (A) commented on how navigation to the lavatory can be left out of access considerations. Telling of a camping holiday Billy recalled;

> *'we went to a campsite and they had built a wonderful toilet block, but they surrounded it with foot depth pebbles, there was no paved access. So there's this cracking loo – just over there and I couldn't get to it. I spoke to the providers and they were gobsmacked, they'd had*

someone come round and tell them what to do, built the loo, put it in brochures, and we turned up and couldn't use it'.

6.3.3. Barriers to the journey; Turnstiles, steps and ramps

Informants told of specific barriers that emerged on route to the lavatory. These included their experiences of turnstiles, steps and ramps. These reflect independent elements of the environment as noted by Evans and Shaw (2009), and signify a lack of consideration for the whole journey experience.

Where encountered in the entrance to toilet provision, turnstiles[5] presented a number of problems, and illustrate that in themselves these items have not been designed from and accessible perspective. Turnstiles can be considered to afford security for the providers in gathering revenue for provision and deterring inappropriate behavior in toilets and therefore demonstrate an fortress versus access approach to design (Greed, 2003, Knight and Bichard, 2011). Jeffrey (A) exclaimed that he didn't *'do turnstiles'*, Lillian found problems *'getting the buggy in'*. Susan considered turnstiles a *'bad thing… they are not at all big enough, so if someone is over-weight, or even if you have a bag'*.

Informants identified that the biggest barrier on route to the lavatory were steps. Fred (C) commented, *'access is not a quantum leap, just a bit of joined up thinking. I joke that I thought access was a credit card until I discovered steps!'* In many ways, navigating steps on the journey to the lavatory are a problem for able and disabled people and can be considered an equalities barrier. Mothers at the National Childbirth Trust focus group (NCTfg)[6] singled out London's South Bank as a *'loo that has the best changing facilities'* but they were *'down a huge flight of stairs which is mad'*, to overcome this mums

[5] Greed (2003) notes that turnstiles were 'outlawed' by the 1963 Public Lavatory (Turnstiles) Act, but that this only applied to 'public' lavatories not 'private' ones, such as those operating at train stations (considered to be private land). There has been a creeping return to turnstiles in former 'public' toilets that are being taken over by 'private' companies and therefore do not fall under the legal requirements.

[6] Herein referred to as NCTfg

told how often they would have *'no choice' but to use the disabled facilities'*. Lillian also commented that if toilets were downstairs *'there's no way to get the buggy down there'*, adding that when this happened *'if you're away from home suddenly you don't want to be'*. Sophie, who is a professional carer told how stairs can be difficult for those she works with;

> *'I took one of the residents out and she wanted to go to the toilet, but the toilet was downstairs… It's like an underground thing and going down the stairs was quite a struggle as she has learning disabilities and she found it quite hard to get down and come up'.*

Belinda (C) stressed that she had difficulty with stairs *'I have to do them one at a time and it can be exhausting, it seems all standard toilets have steps'*. Margo (C) also *'avoids steps'*, as does Jack (C) who finds *'steps can be difficult if curved and badly lit'*. Gavin (B), told of an incident when needing to use the lavatory;

> *'I was standing in the middle of the station thinking 'I want to go to the loo' hoping there would be a sign saying the loo is at least on the same level… well it wasn't down one flight it was down four flights of stairs… it wasn't great. That may well have been the last time I used a public toilet and I just remember thinking 'God I wish these stairs weren't here', it's just a design thing really'*.

79 year old Beverly uses a three-wheeled walker and politely comments that she would *'prefer not to go downstairs'*, and 82 year old Glenda has difficulty walking because of back pain so has to *'count steps'* to see if she can use them.

Some informants felt they could tackle steps if there were handrails. Helen (C) can manage a few steps, but *'it is important that there are also rails'*. Jennifer (C) finds she also *'can mange a few steps with handrails'*. Mary (C) *'can manage up to five [steps] as long as there is a rail'*. 90-year-old Diana recalled a toilet she has struggled to access, *'that had big steps going down as though*

they had built them on a slope of a hill. You had these awkward steps, very awkward with no banister to hold onto'.

For other users navigating stairs on the way to the lavatory will halt the journey. 84 year old Josie said *'as I can't manage stairs very well. I certainly won't go to anything below ground'*. Nina commented that she would not use toilet provision *'down any stairs or up loads of stairs'*, and Shelia echoed *'you've got to be able to get into them easily without going up and down steps'*. Lillian mentioned really nice toilets that she knew of *'lovely facilities'* but because of steps *'you can't get to them'*.
For the Intimate Matters older women's focus group, steps are a gender issue. Recounting a group outing they recalled the need to use the toilet;

> IM1: *'… the men's are on the level but the ladies toilets are down these stairs, and it's really really dark and there are all these hedges and then the gateway and these steps, and that's really dangerous not only cause it's dark but it's steep'*
> IM2: *'the ladies toilets are always downstairs or upstairs and the men's on the level, wonder why that is?'*
> IM1: *'cause they lazy'*.

Whilst steps can be considered an equalities barrier for both the able and disabled body, female informants described the majority of negative experiences. This maybe due to women not only being the primary care givers and therefore having to negotiate journeys with steps whilst using a pushchair, as well as older women being more predominate in the population and needing to use the toilet more often (Greed, 2003). Therefore when considering the affordance of the environment, the inclusion of steps on a journey to the lavatory may also be considered a gendered issue in which the requirements of women of all ages have not been taken into consideration.

Ramps are the principal means to counter stairs, especially for people who use wheelchairs but even these may not afford unhindered access. Billy (A)

described how ramps were a *'nuisance if the ramp goes directly up to the door rather then having a flat surface at the top as you're on the slope trying to open the door and control the chair'*. Maria (C) felt that *'ramps sometimes don't feel safe, and are not well maintained'*. Pam (C) found that some ramps where *'too steep'* and that she *'often has to find someone to help push her up there'*. Glenda (C) commented that *'some ramps are too difficult, too long and too steep. I'm keen to save time and energy'*. Leah (C) recalled how portable ramps can be *'awkward, some places have portable ramps but no signs tell you so you just pass them by – its embarrassing to ask if you can have access*'. For other informants, ramps afforded smoother access. Mothers from the NCTfg felt that *'toilets with ramps are easier to use'*. Fred thought *'ramps are ok if it's the correct gradient and non-slip'*, whilst Jeffrey recalled that for ramps *'the gradient has changed, between 1 in 12 and 1 in 20 is good for me. There are lots more ramps out there. Things have improved dramatically in the 24 years I've been disabled'*.

Ramps can be considered one of the individual improvements to be made to the built environment for greater accessibility (Evans and Shaw, 2009). However, although a key signifier of accessibility, ramps in themselves can sometimes fail to afford the desired access, especially if considerations of access are extended to include independence and the ability to negotiate the environment without the help from others.

6.3.4. Navigating The Journey Summary

There was a call from informants for navigating the journey to the toilet to be more accessible, *'there just needs to be easier access all round'* commented Sharon. Bridget, as mother of young twins stated that, '*you just want instant easy access, as simple as possible and as accessible as possible'*. The affordability of access to the publicly accessible toilet therefore needs to consider the 'whole journey' (Evans and Shaw, 2009), including navigation to the lavatory, and how such encounters such as turnstiles and steps may not afford access to provision for a wide range of people. Consideration also has

to be given to the quality and condition of features that symbolise access, such as ramps, as many will also be inaccessible or difficult to navigate for the users they were ultimately intended for.

From the experiences relayed here it can be seen that various elements of the built environment, creates environmental pressure (Lawton, 1975) resulting in environmental determinism, and therefore does not afford access. For disabled respondents the journey to the lavatory was a concern, whereas for able-bodied respondents, the siting of the toilets in the town was commented upon. Turnstiles were recalled more by able-bodied respondents perhaps because people with disabilities just know to avoid such barriers so do not interact with them. Routes with steps were described as a specific problem for disabled people who did not use wheelchairs, as well as older people. The majority of respondents on this issue were women, which could be considered to reflect the placing of women's toilets upstairs, especially in older venues such as public houses, as well as the remaining subterranean public toilet stock. Gender also appears to be a factor in regards to the use of ramps for wheelchair users, with the majority of experiences with ramps failing to provide access recalled by female respondents with chronic illness. This also suggests those female participants whose disability was through an accident and who use a wheelchair, may be more able, through experience, to tackle varying ramp gradients than those whose disability is an outcome of a health condition associated with age.

6.4 Changing Spaces; crossing the threshold

After orientating the body in the built environment and navigating the journey to the facilities, informants will reach the lavatory provision. The first design artifact they will encounter will be the door to the provision (mostly divided by gender – which, as described above, may not be clearly marked), followed by the internal cubicle door[7].

[7] Users of the accessible cubicle may or may not experience a first door to a lobby area and a second cubicle door.

For Gaver (1991) affordances are *'the fundamental objects of perception'* with people *'perceiving the environment in terms of it's potential for action'* (ibid, 1991:80). Gaver states that *'affordances imply the complementary of the acting organism and the acted upon environment'*, and gives the example of a cat door that affords passage to a cat but not to him. In contrast, a doorway may afford passage to Gaver but not to someone who is taller or wider, and suggests an organism-environment dyad. These examples of affordances are summerised as *'properties of the world defined with respect to peoples' interactions with it'* (ibid, 1991:80).
Maier et al (2009) introduce the artifact-user affordance (AUA) and artifact-artifact affordance (AAA) as a framework for designers to understand how aspects of the built environment may or may not afford use.

The door provides entrance into the enclosed space of the toilet facility and the cubicle, a crossing of a threshold into a new space. Informants' experiences with doors generated 72 quotes whose narrative followed how elements of the door (width, weight, opening and identification of the 'right' door) presented a barrier to access.

6.4.1. Affording access through the door
In audits of accessible toilet provision, Hanson *et al* (2007) found that the fourth consistent feature of the accessible cubicle as designated in the British Standards (BS8300) and Part M of the Building Regulations was that the door to the cubicle was found to have the correct width of 800mm. When considering the cubicle measurements themselves, they found that the width of the door would more likely be correct than the width or depth of the cubicle (ibid, 2007:131). This was reflected in quotes critiquing the door to the standard toilet cubicle, but was seldom made by people accessing the accessible toilet cubicle. Marsha (C) and her carer Lisa did sometimes find *'the door is too narrow'*, and Miles (C) found that his manual wheelchair was of a specific design and that he experienced problems with the door width as

'the wheels are slightly splayed, 3-4 inches wider then the standard chair so I can't get through the door of the toilet'.

Most of the respondents' experiences with door width came from users of the standard toilet cubicle. Nancy (C) who uses a walking aid told how she *'had problems with the size of the cubicle door as it's too narrow and comes up to the toilet pan'*. This was echoed by Danielle (C), who uses crutches and commented;

> *'the clearance of the door is so close to the actual toilet that I find it quite difficult… I think anyone would even if they didn't have crutches, they have to kind of maneuver themselves around the door when there's no gap… you literally open the door and it's like the door is practically touching the toilet so it's too tight a squeeze'*.

The problem of the door width and opening into the standard cubicle space was also mentioned by the NCTfg who added *'there's a problem with it [the door] hits the loo seat so you can't get round with children and [pregnant] tummies'*.

The way the door opened elicited comments that focused on if the door opened inwards or outwards. For the accessible cubicle the British Standard and Building Regulations state that the door should swing outwards to maximize the internal space of the cubicle. Wheelchair users Fred (C) Sally and Jeffrey (A) emphasised that the door needed to be *'outward opening'.* Katherine (B) and Jackie (C), found the outward swing of the door *'easier to open'*. Richard (C) an older wheelchair user described how he had some difficulties with the outward swinging door as he found it *'difficult moving round chair to get the door closed again'*. Closing the door also proved a problem for Adrian (C) who described how the outward door swing *'can be problematic if the door does not self close as I have to use my right hand to close the door and my left hand to control the wheelchair, and as I'm right handed I often end up veering to the left'.*

For other informants a preference was made for inward opening doors. Sarah (C) found the outward opening door was not ideal, as she preferred to *'push door going in, pull coming out…pulling door to go in is awkward when using elbow crutches'*. Margo (C) found outward opening doors *'difficult'*, and Jack (C) stated he *'would prefer to push door in'*. Pam (C) prefers to *'push a door open but have to have the space to wheel in and close the door afterwards'*.

In contrast to the accessible cubicle, the British Standards (BS6465) recommend that the door in the standard cubicle swing inwards. For some informants this form of door opening was not ideal. Vicki commented that she *'would really rather doors, when you leave, to open outwards with a push rather then having to fiddle around with handles'*. 71 year old Paul also felt an outward opening door to the standard cubicle would be more helpful, stating;

> *'I always think the door on the toilet should open outwards not inwards because it's difficult to get in because you've got to get inside next to the pan to shut the door. People don't seem to think about how people get in and out'*.

For some informants it was the weight of the door that can be considered a barrier to crossing the threshold of the toilet. The heaviness of the door caused *'problems'*, *'difficulties'* and *'concerns'*. For Marsha (C) and Lisa, some doors were *'just too blooming heavy'*. Billy (A) found the springs on certain doors could sometimes be *'a bit aggressive'*. Maria (C) commented that she *'finds it easier getting in then getting out, easier to pull the door open then to push to leave, especially in a wheelchair'*, whilst Glenda (C) described how *'it's difficult to hold the door when pushing it open'*. Sharon (C) told how she would *'push a heavy door if I have the scooter'*. Katherine (B) told how although she *'does like to be independent'* she's *'not shy to ask people to help if on my own'* and hence if had difficulty with a heavy door would *'wait for someone to come past'*, as she *'sometimes has to ask'*. One of the mothers from the NCTfg told of how the heaviness of the toilet door caused particular

problems for her son *'as he can push them to get in but can't pull them to get out, and has to wait for someone to open the door so he can get out'*.

For users of standard toilet provision there emerged the experience of being confused by a number of doors that all look identical within a multi-cubicle facility. Two informants from the NCTfg told of separate incidents involving confusion over which door to use to exit the facility. On women told of how she;

> *'had to climb out of a window because I couldn't find the exit. I tried what I thought was the door but it was locked and I panicked. I shouted out but no one responded so I climbed out of the window. I made a complaint to the manager and they came back with me and showed me that the door was open. I turns out I got the exit confused with a cupboard'*.

Similarly, a mother told how a similar confusion caused her and her son to panic.

> *'My son, he's 7, insists on going in the men's toilets, he doesn't want to go into the ladies anymore, "I'm a man I'm not going in the women's loos", I was in the ladies with my daughter and I heard a howl of complete terror "mummy", and I panicked, I thought there was someone in there, somebody was doing something, so I rushed into the gents loos and found him trying to open a cupboard door. There were all these doors around and he couldn't remember which one he'd come in from. For children learning to use toilets on their own it can be completely terrifying'*.

6.4.5. Crossing the threshold summary

The door is the physical boundary between the outer environment and the interior of the toilet cubicle itself. It affords both entrance and exit, but also, as will be discussed further in the thesis, it symbolizes a crossing of a threshold into a separate space that affords privacy, comfort and security. This section

has presented the door as an object that affords access to the toilet cubicle. For the accessible cubicle, as currently designated in the Building Regulations and The British Standard the door should open outwards. Yet such opening can cause problems for many disabled people if the door does not have other attributes such as a manageable door weight that can provide the minimum of resistance but a maximum of closing ability. Compared to the design recommendations for the accessible cubicle, those for the standard cubicle (BS6465) recommend inward opening doors. Some informants find this problematic, yet this appears to be for the same reason that users with disabilities find an inward opening door to the accessible cubicle inconvenient, namely that it takes up space. A bank of toilet cubicles in a facility with many doors was also shown to fail to afford exiting the provision – instead affording confusion for adults and children alike.

The experiences of informants described here suggest that users across ages and abilities experience difficulties with doors. Both men and women with chronic health conditions emerged as experiencing the greater difficulty, which suggests that this is not a gender specific issue. However female informants who used wheelchairs (or in Sharon's case a mobility scooter) were in the majority in describing their experiences of difficulties with the weight of doors to the accessible cubicle. For female users of standard provision, the only toileting option is the cubicle and hence comments regarding accessing this space will be weighted by gender.

6.5 Securing the private domain

The sub-term 'nested affordances' (Gaver;1991) describes 'affordances grouped in space'. To illustrate this he gives the example of a door handle, on its own a disembodied independent artifact, but which affords the required action when it is attached to a door. Thus a door may offer a passage through a wall but it is only when the pulling of a handle is nested in the affordance of pulling a door that opening the door can be considered a perceptible affordance.

The door handle can also be considered to offer artifact-user-affordance (AUA) (Maier *et al* 2009), as product nested within the door, which as in integral part of architectural design both for security and fire risk can be considered an artifact-artifact affordance (AAA).

The door handle affords opening and closing the door to the toilet cubicle, and the choice of design for the toilet cubicle door in many facilities is dependent on if the door opens outwards (accessible cubicle) or inwards (standard cubicle). In the majority of designs, the handle for the door has been integrated with a lock mechanism to secure the private domain of the toilet cubicle.

The handle for the accessible toilet cubicle is often incorporated into a locking scheme, which operates under the Royal Association for Disability and Rehabilitation (RADAR) National Key Scheme (NKS). Currently there are approximately 7000 accessible cubicles operating under the NKS in the UK (Age UK, n.d), the majority of which will be publicly accessible.

For securing the standard toilet cubicle, a number of varying lock/handle types will be found on the door. These may present specific problems to people who experience some form of dexterous difficulty but who do not consider themselves disabled and requiring the full amenities of the accessible cubicle.

Informants' made 103 comments regarding their experiences of door locks. The narratives of these focused on three themes of locks and door handles including the various kinds of locks experienced, their difficulty and locks operating under RADAR.

For some informants, the options for securing the private space of the toilet cubicle and the type of lock affixed to the toilet door determined a level of independent access to the lavatory cubicle. Max (C) felt that *'some of the locks on toilet doors are stupid, the size of them… just little aluminum knobs…*

with no grips on. My thumbs don't work very well, trying to lock those is very difficult'. Jack (C) felt that the door *'needs a big door lock'* one that worked by *'using the elbow or back of the hand… sliding movement would be easier'*. Katherine (B), echoed the need for a good-sized lock *'best one, a big handle lock that slides across, the bigger the better'*. Susan and Rosa also expressed a preference for big locks in the standard cubicle commenting that *'those locks with big handles, like levers, they're easy to use and they never seem to get stuck'*. Equally, Tessa stressed locks should be *'child friendly and safe, not one that's going to get damaged'*. For NAfg participants, door locks had to be *'lightweight with a lever handle'*.

One type of lock that received particular comment were electronic locks as found in many train toilet cubicles and in Automatic Public Conveniences. These locks have been recorded as being a barrier to access for people with cognitive disabilities (Bichard *et al*, 2007), but were also singled out by users whose cognitive abilities were not impaired. Fred (C) was adamant that *'toilets must not have those electronic locks, especially if you have limited dexterity. They are also confusing'*. Craig (B) found *'those three-stage locking devices on trains are just counter intuitive. I've accidentally pressed the emergency button in there'*. Marsha (C) and Lisa bemoaned that such locks were a *'nightmare'* and they *'sometimes have to try and work them out'*, and a member of NCTfg asked *'why am I having to read instructions on how to close a door'*. Tessa found the door system *'horrible… you never know if it's going to open or not'*, whilst Ivan (C) commented that these locks made him *'so nervous that somehow someone else could get in'*. He added *'you know as you get older you distrust technology and all you want is a simple door lock'*. The Manchester Mum's focus group (MMfg)[8] also made reference to these locks with one commenting that she'd *'had a train door open on me, really embarrassing. I think those locks are difficult for older people and people with learning disabilities'*.

[8] Herein referred to as MMfg

Both focus groups that comprised of mothers mentioned the issue of the locks' position on the door. This was made with specific reference to the standard toilet cubicle. One mother felt that;

> *'the door locks are too low and too easy to open, as soon as she's (Daughter aged 4) done she wants to get out. I've been left sitting there whilst she shooting off somewhere, so now I leave her pants round her ankles whilst I use the loo and then redress her when I'm done'*.

Yet for other mothers the door lock is too high and this becomes a problem *'when they start using toilets on their own and can't reach'*. One mother who had also experienced her child running off and being left *'with your trousers down so you're not going anywhere'* suggested perhaps there could be *'two locks at two heights'*.

Within the accessible cubicle, Tara (B) commented that, *'as a person of restricted growth'*, she sometimes had to *'stand on a stool to lock doors, locks are often too high and you can sometimes reach the lock to lock it but don't have the strength to unlock it – so I can't get out'*. In contrast, Helen (C) found the door lock can be placed too close to the horizontal grab rail making it difficult for her to reach *'you get hindered by one and helped by the other'*. Within the standard cubicle the size of the lock came in for comment. Leah (C) finds that *'locks on doors vary, some are ridiculously small, I can't use'*. Pat, (C) finds door locks difficult because of *'limited strength in my arms and sometimes find that whilst I can lock the door, I can't open it afterwards'*. Allan (C) also *'has terrible trouble with door locks, often they may be easy to close but rely on more grip and pressure to open in which case I get stuck in the toilet'*. Katherine (B) and Adrian (C) experienced similar problems and *'had been stuck in toilets a few times'* as a result. Carla (C) recalled that *she 'can't do fiddly things – like locks, can often close them but can't open'*. A member of NAfg told how she now dealt with locks she could close but not open, *'now I don't lock the door – I go in and just hope no-one comes in. I've been stuck in the loo too many times'*. Another member of the focus group told how on being unable to lock the door someone had walked in on them *'and everyone*

could see, it was very embarrassing'. In contrast, an informant from St Charles 6th Form College (StCSFCfg)[9] told how they had been unable to open a locked door at aged 12, *'I was trapped in the loo… they had to break the door down. I had to stand on the loo whilst they broke the door, I was crying'.*

6.5.1. RADAR

Most 'locked' toilets are on the National Key Scheme operated by RADAR. Although especially designed for people with disabilities, the lock and key itself can sometimes be inaccessible to those who need it. Carla (C), who has arthritis finds the *'RADAR key is difficult. Sometimes I can't use it because it's too fiddly. I just go home'*. An informant from the NAfg told how she also had chronic fatigue and that *'I can't use RADAR, I have co-ordination problems and the locks are too low'*. RADAR locks are often set low as this is considered to be a more accessible height for people who use wheelchairs. Yet for users of the accessible cubicle who do not use wheelchairs, the placement of the lock can prove problematic. Sharon (C) described how *'I have problems with my hands so find it difficult to turn (the key in the lock). Sometimes the lock is too low and I can't even get the key in'*. Jenny (C) thought that the;

> *'key is awful. I have a tremor in my right hand so can't possibly use a key in that hand. By the time I've got it out of my handbag and then trying to get it in the lock, it's too long and I worry I'll wet myself. I find locked toilets so frustrating'*.

Katherine (B) expressed a particular dislike for *'locked'* toilets as she had to *'faff about getting in there'* and the locking system was *'a pain to use – I don't have very good coordination so keys aren't good for me'*. Instead Katherine thought a system on a *'touch card'*, similar to Transport for London's *Oyster* system *'would be great'*.

Carla (C) described how she;

[9] Herein referred to as StCSFCfg

> *'hates having to find the key and try to use it, putting it in the lock because its difficult for me… especially when it's cold – the metal gets cold and it's like being burnt. It would be good if they could change those locks [to be] like the Oyster card'*.

The RADAR key itself was commented on as being *'bulky'* (Abigail) and *'difficult'* (Billy). The key itself is nine centimeters long so can be awkward in a bunch of keys. Nancy finds the RADAR key *'too big to carry around'* so keeps it *'in the boot of the car'*. Abigail (A), found that because it was bulky she stopped carrying her key as '*most of the time if you don't have the key you can find someone to come and unlock the toilet, but if there is no-one then there is problems'*.

For informants who did not have a RADAR key, or did not have it on them, having to ask for the key was commented upon. In these instances, the access afforded by the National Key scheme was impeded by having to then go and find someone who has the appropriate key. Nancy (C) thought that this was *'the trouble with locked toilets is that you go to the loo and see it's locked and then have to walk 100 yards or so to get the key. I think this is a real dilemma'*. Ivan (C) who is managing urinary frequency, found that;

> *'you have to go and ask someone and you are generally made to feel bad and by the time you wait for them to get the key, with my UI it is already a problem, because you only have to think about going to the toilet and then it comes'*.

The issue of urgency when asking for the key, was also raised by Jenny (C), *'I find the toilet locked and then have to find someone then it's too late. Its very inconvenient to have to find the key'*. Jeffrey (A) told of occasions when he has had to ask for the key and it couldn't be found, especially when he has had to *'queue up to ask in the first place, I despise having to do that'*. Some informants told of toilets being locked but not under the RADAR scheme. Dr A (B) who has a RADAR key commented *'I have come across locked loos not*

on RADAR and have had to go and find someone to get the key, which can be a bit of a problem, as I tend to leave going to the loo until the last minute'. Maria (C) added that;

> *'some stores have their own key… that's awful especially if you desperately need to get to the toilet, by the time you find somebody who has the key whose usually somewhere else – it can be too late sometimes'*.

Some informants commented on the issue of locked toilets and were unaware of the National Key Scheme. Ahmed stated that he found *'many toilets locked'* and Bridget, the mother of twins said that *'sometimes they have locks on them, so unless I can get in there and then I won't bother, because you have to find the right person. I find they're locked more frequently'*. Tara (B) a frequent visitor to the UK from the United States commented that the *'RADAR key is annoying – how do you know about this if you're a tourist… and it's not easy to get. An English friend got me one, seems like it's taken for granted that people will have one'*. Jessica says that she doesn't *'have a RADAR key, I don't know if it's worth it as when I get inside I often can't use the lav anyway'*. Jessica (C) added that she *'hates having to ask for the key. I had to ask once and it couldn't be found, so I ended up peeing in the car park'*. Sarah (C) told how she finds a lot of disabled toilets locked and needs a RADAR key, but *'I don't know where to get one, I've had no information about it at all'*.

Informants also mentioned information about the National Key Scheme. Mary (C) told how if she sees *'someone struggling'* to get to the standard cubicles she will tell them about the RADAR key. Jenny (C) got a key from her mother who has ulcerative colitis. Leah (C) heard about the scheme from a friend and described it as *'a godsend when I got mine'*. Similarly, Samantha (C) described how she *'heard about the scheme from The Gut Trust. One of the things they recommended was the RADAR key, so that's one of the best things I've ever got'*. However, Danielle, (C) told how she heard that internet sites were;

> *'encouraging mums to buy RADAR keys for access to the disabled toilet'* and that it was *'quite a challenge because ultimately those facilities aren't' necessarily their baby changing facilities'*.

The issue of other users with RADAR keys, was also discussed by informants with reference to a flaw in the locking system. The design of the RADAR lock coupled with its low placement on the door often means it is difficult for users to ascertain if the facility is vacant or engaged. In addition, the need for the door to be easily opened in case of emergency often results in users opening the door to find the accessible cubicle in use. Nancy (C) stated that she didn't mind accessible provision being unisex, *'as long as the lock is good. I've barged in on others using the loo before. It needs to be a lock so that you can see it's in use'*. In turn, Nancy had also had someone walk in on her, she was *'very embarrassed, and my mother who is now 90 panics if [toilet] doors have bad locks'*.

Abigail (A) told how she has her carer *'knock first because you can't see if its engaged'* adding;

> *'I have had it happen to me – and everyone can see you sitting on the loo. You get over it but it's a bit of an embarrassing thing to happen. I don't think that key should be able to open it if it's engaged or you need a bigger sign saying the toilets currently in use'*.

Sally and Jean (Ax2) have also had someone walk in on them and described it as *'very embarrassing'*. Jean added that she thought it was because of a faulty lock but then realised that *'you can't see the engaged symbol because it's too low'*. Maria (C), Jeffrey and Philip (Ax2) echoed the experience of being *'walked in on and walking in on'* people using RADAR locked toilets, and considered the difficulty in discerning if the toilet was engaged to be consideration for redesign.

The variety of designs for door locks to the toilet cubicle reflects the specific design of the space. For the standard cubicle, the non-standardisation of

locks results in a range of different designs being incorporated, many of which do not consider usability issues of dexterity. For many users, this results in the door lock failing to afford its secure function. In contrast, for the accessible toilet cubicle the door lock has been specifically designed for users who may have dexterity problems as well as placed on the door in a position that is presumed to afford access to a specific user group, namely those who use wheelchairs. Informants across the disability categories mentioned difficulty with door locks and hence there is no specific disabled body who encounters this problem as an issue directly associated with their condition. However, the locks positioning creates difficulties for other legitimate users of the provision. The majority of informants who described difficulty with locks were once again female in both the standard and accessible accommodation. As previously noted this may be due to women encountering doors more in standard cubicle provision. In accessible provision, this may be considered a result of dexterity and strength in operation of the lock.

6.5.2. Securing the private domain summary

As a product attached to another product, the door handle / lock is a 'nested affordance' (Gaver, 1991) that serves a number of functions. Not only does it offer physical access to the enclosed space of the toilet cubicle but also secures the space of the toilet cubicle and as will be discussed in chapter 8, generates feelings of security, not only for personal safety, but also for privacy whilst undertaking the highly personal act of toileting when away from home. Knowing that the toilet door is securely locked is important for most users, especially for those with mobility impairments of the arms and hands. Ensuring the door is securely locked can also generate anxiety regarding opening the lock and the door after the use of the cubicle. Here the AUA may result in a negative affordance.

It can be suggested that the RADAR scheme has, for some users, been a great success in that it affords access to toilet provision that has been designed to meet their needs, sometimes this access is afforded 24 hours a

day. However, the RADAR scheme in itself may not be considered fully accessible with its requirement of dexterous key use. Consideration also needs to be given as to where this nested affordance is placed on the door. The locks' low placement to aid many users of wheelchairs reveals a fault within the design, as it does not clearly notify if the facility is in use or not. This also presents difficulty for disabled people who do not use wheelchairs but still require the provision offered by the accessible cubicle. Failure to gauge if the accessible cubicle is engaged has resulted in many users encountering embarrassing situations, and fails to afford that the toilet cubicle is secure. Similarly to the affordance of the standard cubicle door lock, the AUA of the RADAR design may result in negative affordance.

6.6 Occupying the space.

Discussions on the toilet cubicle centered on two distinct design templates; that of the gendered standard cubicle and the unisex accessible cubicle. These two forms of provision will now be discussed jointly to illustrate firstly; how by not considering how the cubicle affords access to the act of toileting, users of both cubicle designs experience difficulties in occupying the space. Secondly; to show how different categories of users (men, women, able, disabled), make decisions based on their experience of the cubicles affording physical access and which cubicle is more suitable for occupants.

The provision of space for a toilet cubicle (standard and/or accessible) is required in all buildings, and can therefore be seen as an unperceived affordance, taken for granted that provision will be supplied, and can be considered an artifact-artifact-affordance (AAA). However, when encountered by users the framework category will shift to become one of artifact-user affordance (AUA) with the toilet cubicle in a relationship that is directly useful to users (Maier *et al*, 2009).

The issue of occupying the cubicle generated 195 references. These comments focused on the following narratives of respondents' experiences occupying four design templates, as detailed in chapter 4, of:

- The standard gendered cubicle
- The accessible gendered cubicle
- The accessible unisex cubicle
- The ambulant gendered cubicle

6.6.1. Occupying the standard gendered cubicle

Concerns regarding occupying the standard gendered provision were voiced with regards to the perceived ratio of provision between genders, or as it has been called in the United States 'potty parity'[10], and access dilemmas faced by parents with children of the opposite sex.

Dr A (B) felt that *'there always seems to be more men's loos than women's, and the unisex loos always seem to be near the men's'*. Sheryl felt the lack of provision *'hits women more then men, if there are five toilets with 10 people ahead of you it's quite a long wait'*. She felt that a poor design decision was the introduction of washing provision within the standard cubicle itself, *'I know it's handy, but it means people stay longer in the cubicle washing their hands and doing their makeup and there is a great queue of people needing the loo outside'*. Al, a participant in the MBMEfg felt that women's facilities were often smaller then men's and he *'often sees large queues of women waiting to use the toilets'*. A participant in the Intimate Matters focus group also felt *'there's always more men's toilets then there is women's'* and that *'sometimes women get the hump and hijack the men's toilets and they won't let them in'*. Another participant in this group spoke of another design decision to divide toilet cubicles by gender but to have shared hand-washing provision;

> *'I know it sounds silly in this day and age but I still get quite embarrassed… I was having a meal at Weatherspoons up town and I went to what I thought was the toilet and when I went in there, there were men at the sink washing their hands, but what it was, there was a*

[10] Potty Parity is the term used to denote equitable numbers of cubicles assigned in male and female provision. Due to the time taken for women to undress and use a toilet cubicle in privacy, it is currently recommended that parity should be 2 cubicles in women's toilet for every one urinal/cubicle in male provision. See Anthony and Dufresne (2009) for a discussion on 'potty parity' within the United States.

door for the ladies and a door for the men's, but there was a communal washing area. I'll be honest with you, I'm a bit old fashioned I didn't like it, but I had to go – just standing up I have to go'.

When asked if they would consider using standard toilet cubicles that were for unisex provision, the female participants from StCSFCfg were particularly vocal:

F1: *'no way, that would never work'*

F2: *'it would just allow things to happen, rape and sexual things'*

F3: *'I wouldn't feel comfortable using them. I would avoid them even if it was the cleanest toilet. You need to be private, especially when you've got your period'*.

F4: *'I don't like the idea of men and women cubicles. Men wee on seats then you have to touch them'*.

Informants' comments were particularly focused on the space allocated for occupying the standard cubicle, the design of which, as discussed in chapter 4, is specified in the British Standard BS6465. Alica (C) describes a typical encounter with the standard toilet cubicle *'I'm usually wearing a backpack and there's no room to rotate or sit back with the back pack on, you have to remove it and there's no where to put it, more often then not the space is too small'*. Equally, the issue of having bags was raised by Susan and Rosa *'you are more likely to have bags and things, if you have a suitcase you don't want to leave it outside you want to bring it in with you but there's no room'*. Claire who often travelled for work found that with luggage *'you often have to do some sort of origami of folding yourself over your luggage in order to squeeze in'*. Sylvie also found *'I've normally got loads of bags so having a stall that is big enough, I don't want to leave my bags outside'*. Audrey found the standard cubicle *'pokey'* and *'cramped'* especially *'if it's winter time, you might have shopping bags or a coat'*. Ivan (C) also commented on the size of the cubicle in regards to seasonal clothing changes;

'you need a cubicle which is a little more generous with space for people, to allow people the space to hang their coats up and things like

that because nobody likes, in winter when you go into a toilet with a coat on, no one likes to have their clothes draping around places where other people's urine might have dripped'.

Nancy, Jenny (Cx2), Tara and Dr A (Bx2) all of whom use walking aids, described the standard cubicle as *'too small', 'so cramped', 'not enough space'* and *'not big enough'*. Belinda (C) finds the standard cubicle too small not only for managing her health condition but also;

'because I look after my three year old grandson. There's not enough room to see a toddler in the toilet, you've got to leave the door open. I can't really get down because of my arthritis so I have to bend over to see him and the cubicles are too small'.

This issue was also echoed by participants in the Enfield Older Women's focus group, who found the cubicles *'too small for me and the grandchildren'*.

Managing their own toileting needs whilst caring for children was raised by Nina and Tessa. With regards to negotiating the space for themselves, the pushchair and the child, Nina told how she *'normally leaves the pushchair outside'*. However, Tessa explained how she would negotiate this spatial dilemma and childcare responsibility;

'I don't want to leave him in the push chair so either you take the baby out of his push chair and you carry them while you go to the toilet, which is quite hard as you can imagine but you have to do it quite a lot of the time, so I learnt a technique which is to go to the end toilet put the push chair sticking out because obviously it wouldn't fit in and just go to the toilet with the door open thinking that everybody would see the push chair there and wouldn't come and look into the toilet'.

Women from the NCTfg echoed Tessa's technique adding *'you loose you're your inhibitions when you have children because you have no choice – it's not dignified'*. A mother with a newborn child explained how she;

'leaves the buggy outside and balances the baby on my knees, I'm trying to undo my jeans and the baby is all floppy and it's hard to

support their head, you can't sit them, and you can't lie them down on the floor, its really difficult'.

Another mother told how the size of the cubicle had been problematic during pregnancy;

'I got stuck in the cinema loo when I was pregnant; it had one of those big loo roll holders and it blocked the exit, I was trying to get out between the edge of the door and the loo roll holder and I became wedged, so I had to go back in again and come out a different way, but I couldn't get out that way either. I thought "this is ridiculous, I've gotta be able to get out" eventually I squeezed out but I had to squeeze my bump'.

And another mother added;

'its similar going to the loo with a toddler. The child has to shuffle up to the san bin while you try to close the door. Then when I was pregnant there was no room to get me and the child into the loo and I had to leave the door open, it's a nightmare. The cubicle is much much too small'.

The MMfg told similar tales of space restrictions in standard cubicles. One commented;

'I really don't like narrow cubicles, where you end up touching the sides, especially with a child, they touch everything. You end up getting cross with them it's awful your always shouting 'dirty' at them'.

Considering caring for a baby and needing the toilet one mother told how *'I once went to the toilet with the baby on my knee, it's not nice when you have to poo. So next time I asked the attendant to look after her. I felt really bad'*. Another mother summed up the issue *'the cubicle needs to be bigger to get the pushchair in, you need to be able to turn it around. We need family toilets but also a bigger cubicle in the ladies'*.

The StCSFCfg and the Geezers club also raised the issue of the size of the standard toilet cubicle. A female student from St Charles' commented *'the cubicles are too small, oh my days, you have to walk around the door – I bet a big person couldn't fit in the loo'*, whilst a gentleman from the Geezers club said *'the cubicles are too small for people who are disabled or with a joint problem or a tummy. I push myself against the wall to open the door and the door is literally touching my tummy'*.

The lack of adequate space in the standard toilet cubicle was a concern raised mostly by able women, who as primary carers, had their needs but also those of children to consider. However, women who can be considered ambulant disabled also described difficulties negotiating this space, as did older men. Whilst the provision of a standard cubicle within a building represents artifact-artifact affordance (AAA) of indirect benefit to users, with the provision itself considered positive, due to poor space allocation its artifact-user affordance (AUA) and its direct benefit to users can be considered negative.

6.6.2. Occupying a gendered accessible cubicle

Helen, Mary, Belinda, Betty and Sharon (Cx5) all expressed a preference *for 'a separate [accessible] cubicle in the ladies', 'an adapted cubicle in the ladies'* and a *'disabled cubicle in the ladies'*. Claire thought provision should be *'segregated for something quite intimate'*. Abigail (A), who uses a wheelchair explained how she particularly disliked unisex provision, *'you see ladies, gents and unisex, and I would just prefer to use the ladies, either a bigger cubicle or a separate facility that is also gendered, especially in a big place where there's lots of space'*. Carla (C) who requires a mobility scooter stated *'I would prefer separate gendered provision because men are ghastly, also you wouldn't have to queue'*.

Philip (A) also commented on queues as his reason for a gendered accessible provision preference;

> *'I often find the unisex cubicle is being used, mostly by women as there is never enough women's toilets and the queue sometimes stretched to the disabled loo. If there's an adapted cubicle in the men's it's pretty much always there when I need it or there are not many other men waiting. But I know this [gendered accessible provision] can be problematic. I once saw a women in a wheelchair waiting for the women's toilets and suggested she used the men's as there was a cubicle in there and no queue'.*

All participants in the MBMEfg felt that '*male and female facilities should be kept separate*'.

For these users there was a preference for gendered provision. This may be based on the historic and cultural separation of the toilet space by gender, and also reflect the desire of those who are disabled yet independent and not requiring assistance to a carer of the opposite sex, to use facilities designated by their gender.

In contrast to those who preferred the option of a gendered accessible cubicle, some informants had experienced such provision without the option of unisex provision and had found it to be problematic for both themselves and/or their carers, when they have to transgress the gender designated space of the publicly accessible toilet. Abigail (A) who uses a wheelchair, told how at the Royal Festival Hall;

> *'they have an adapted cubicle in the women's toilets. I wasn't feeling very well so my carer rushed me to the toilet. There was a chair outside so he waited there. After about 5 minutes a security guard came in and told him he couldn't wait there. Two women had complained that there was a man in the loo. He told security he was waiting for his friend in the disabled loo who wasn't feeling very well and wanted to be near in*

case I needed him but was told he couldn't wait there and had to wait outside. But neither of us had realised the cubicle was in the ladies, we looked at the sign when we came out and realised it was but it wasn't' obvious'.

Jean (A) who also uses a wheelchair echoed Abigail's experience where there was no unisex provision explaining how her husband *'has to come into the adapted cubicle in the ladies, it's very embarrassing for him'*.

Both Sarah (C) and Philip (A) recalled how they had to use the accessible cubicle in the provision of their opposite gender. Philip also told of confusion with how some unisex provision is shared within the gendered provision (See figure 43 for example)

'sometimes the disabled loo is in the ladies. I saw the wheelchair logo pointing to the toilet but when I went in it was also the ladies. I was worried about how I was going to get out. The sign said men with an arrow pointing one way, women with an arrow pointing another way and disabled with the arrow pointing the same way as the women's. As there was no one around I just used – but I have had some funny looks when this happens and I do find it a bit embarrassing having to go through the same entrance point. The cubicle is private it's not in the ladies but women do look at you'.

Figure 43. Toilet door denoting accessible cubicle shared with female provision.

Joseph, as carer for his wife also found using gendered accessible provision difficult *'if we have to go to the ladies loo I will go there with Barbara. I ask the attendant to tell the ladies in there. I have had women say things to me'*. Keith at the NAfg felt *'there's not enough unisex loos, I care for my wife and sometimes have to go into the ladies to help her, it's embarrassing'*.

6.6.3 Occupying the unisex accessible cubicle

The perceived issue of space transgression also extends beyond that assigned by gender. Many informants spoke of a preference for occupying the unisex accessible cubicle due to its accessibility, not only in terms of space but also for the assigned use for unisex. Tracey, described how her four year old daughter Eleanor;

> *'can take herself to the toilet, but in a public place I don't want her to take herself off and I don't want her to go to the toilet with the door open, so it's much handier having the disabled toilet that you can take the buggy into and be there when she goes'*.

Bridget, a mother of toddler twin boys also expresses a preference for using the *'disabled one'* as she *'can wheel the double buggy in there'*. Yet she also expresses some concern that *'in theory it's not ok to just use the disabled toilet'*. Bob as father of a seven-year-old Madeleine describes taking his daughter out on her own;

> *'Sometimes you come across situations where there just isn't the provision and you have to think on your feet, so I tend to seek out the disabled toilets. They're unisex for a start and they tend to be large so that there is room for two in there'.*

However, Bob feels that the unisex accessible cubicle might not be an option for much longer, as his daughter;

'is at a cross over age where she's not keen to share a toilet with me… She's sensible enough not to go off but I don't like letting her out of my sight in a public place… I would really appreciate a family toilet as I do feel uncomfortable when I have her insisting on going to the toilet by herself'.

Bob continued to challenge the generic provision of the unisex accessible toilet as;

'only for disabled access… people need accessible toilets, totally understood, but I don't understand people necessarily having priority because they are disabled. Equality fine, priority, hmmmm, maybe. I see it as accessible to disabled people rather then exclusive to and it affords me a comfortable environment where I can take a young child. I think unisex toilets are the way forward but I think it's a real design challenge'.

71-year-old Paul comments;

'I try to use the disabled toilet because it makes it easier for me. I'm six foot three and weigh 26 stone so the cubicle size has to be a realistic size, so lets be fair, I can't get into a normal cubicle'.

84 year old Josie also *'frequently uses the disabled toilet'* because she *'needs a bit more elbow room and some of the [standard] cubicles are very very narrow'*.

Participants in the NCTfg described how they had *'never been challenged when using the disabled toilet'* but that at a newly built swimming pool the only toilets suitable for families were the *'disabled ones, and there were people hammering on the door wanting to use the loo'*. The MMfg also described how they *'always use the disabled loo… as they have baby change and there's plenty of space'*. One mother commented that she *'always see's people coming out of the disabled loo after work'* and assumes they are *'having a wash and getting changed'*. She felt the accessible cubicle was

especially suited for personal hygiene needs when away from home *'there's nowhere else to wash, especially if you've started your period or if the kids have an accident'*.

One of the participants from the StCSFCfg described how they *'use the disabled toilet when there's a queue for the ladies, its nice and huge'*. When asked if they had ever been challenged on using the accessible toilet and what they would do if they were they responded *'I'd be horrified, I would say sorry'*.

The older women from the Intimate Matters focus group described how the queue for the ladies toilets also nudges them towards the accessible provision;

> IM1: *'we've used it quite a lot, especially when there's queues and you really want to go'*
> IM2: *'well that's fair enough if you really want to go'*
> IM1: *'it's the same in Marks and Spencers, there's a queue up to here and a disabled one that no-one's using'*
> IM2: *'oh I think that's silly, you know unless there's a disabled person there and then you let them use it, but I think that its silly that disabled toilets are empty. I'm not saying put them on the street cause they'd be abused like the others, but in restaurants and places like that, I don't think they should be restricted purely to disabled people, unless there's people there that need it'*.

Preference for occupying the unisex cubicle was made due to its spatial affordance for more then one person who may be of the opposite sex. Fred (C) stated *'I prefer the unisex cubicle as I need assistance'*. This was echoed by Colin (A) who commented;

> *'if I change any clothing [the unisex cubicle] is necessary, because I often need help of a companion to remove my socks and shoes. I*

prefer the unisex cubicle. I like to have the support rails to help me sit on the toilet in a position where my companion can assist me'.

With one eye on his future, Jeffrey (A) expressed a preference for the accessible toilet because *'I may need help from my wife in the future'*.

Explicit reference to access because of mixed gender use of the cubicle was made by Tara (B) who compared the provision of the unisex accessible provision with the gendered accessible provision in her own country, the United States, *'there's no unisex in the US all the cubicles are adapted in the men's and women's. I like unisex, especially when I'm travelling with my husband'*. Katherine (B), who had travelled to the United States on holiday also commented on the difference between the countries toilet provision and how it was problematic for her when toileting;

I prefer unisex to gendered. In the US there's a bigger cubicle in the ladies. I didn't like it. I could see people queuing up, I don't like being pushed for time, I like to take my time and have my own little space'.

Margo (C) preferred the unisex cubicle as she felt that *'if there was an adapted cubicle in the ladies everyone else would use it, there wouldn't be a priority system as if their queuing they don't care'*. Philip (C) felt that unisex provision was more then adequate and that there was no need for gendered accessible provision as *'in there, you shut the door, it makes no difference'*. Sylvie found that *'unisex loos can be more efficient, women don't seem to spend quite so long and men seem to be a bit cleaner – don't know why!'*.

Informants' who expressed a preference for the unisex accessible cubicle also shared concerns regarding the space of this provision. Many of these comments focused on the need for a bigger cubicle. Belinda (C) suggested it needed to be *'the current size plus half'*. Dr A (B) stressed that the cubicle needed to be *'bigger, not just for the wheelchair but for changing and washing'* adding that if the cubicle is not big enough *'I leave the chair outside*

an walk in'. For Margo (C) *'the bigger the better'* was her preference. She added that the size of the accessible cubicle was *'problematic'* as *'there's such a difference in the design and size'*. Jean (A) found many accessible cubicles *'feel small… I sometimes wonder how people with wheelchairs get in, it's not a comfortable experience'*. Sophie told how she would like more space as a carer *'because your helping someone disabled to the toilet you need the space around them, especially if it's a child'*. Juliet wondered if her *'slightly wider wheelchair'* was *'the problem'*, and felt she *'could not be catered for in every place'*. The NAfg also noted that wheelchair variation was problematic for access to the cubicle *'there's also a variety of wheelchairs, the unisex isn't a one size fits all'*. Pat felt that they should be *'spacious so that two people can go in at the same time'*. The PAMIS focus group also pointed out that *'the space of the toilet is important often because you're holding onto your child whilst trying to get the bench down – it's dangerous'*.

Informants specifically detailed the need for more width within the cubicle to afford better access. Fred, Sharon and Jackie (Cx3) all described a preference for the cubicle to be *'a square shape'*, *'squarer'* and *'more square'*. Miles (C) wanted *'more width*', Pat, Marsha (Cx2) and Lisa stressed that in current provision there was a *'lack of width'* and the cubicle was *'not wide enough'*. Glenda (C) preferred the cubicle *'to be wider'* and the participants in the NCTfg also felt the accessible cubicle *'could be wider… width more important then length'*.

The need for a wider cubicle was specific to accommodate the action of turning a wheelchair in the accessible cubicle. Miles (C) identified 'turning space' as the;

> *'biggest problem with the power chair. Some you can't turn around to shut the door, might be able to get in head on and use the loo but can't close the door. Sometimes I can twist round and close the door but then often I can't open it again. Lots of toilets call themselves disabled but there's not enough room to turn around'.*

Adrian (C) often found the *'cubicle too small to turn in. I often have to adjust footplates when getting into the cubicle. I've also developed a method for going in backwards'.* Going in backwards to negotiate a lack of spatial width was also practiced by Betty (C) who found that if she *'goes in backwards don't have to turn unless I have to'*. Katherine (B) described how she would have to leave the toilet backwards;

> *'my work toilet didn't have enough space so I backed out to the door facing the loo with back towards the door. It was really hard to open it. In the manual chair it wasn't such an issue, but in the electric powered chair you need quite a big space'*.

Maria, Jackie, Marsha, Lisa and Carla (Cx5) all commented that turning space was *'not enough'*, *'not always adequate'*, *'can be a little tight'* and *'needs to be unobstructed'*. Carla also described how she;

> *'often has to make a quick choice in how I approach, turn and reverse in and turn round inside and reverse out. Sometimes I get it wrong – I reverse in and then there's no room for turning and it can be awkward to get to the loo, especially locking the door'*.

Billy (A) also described how *'sometimes there seems to be the space but you just can't turn'*. Joseph (A) felt the *'turning circle is the most important thing in the loo. We need space for two people and the wheelchair'*. Terri described how *'its mainly being able to manoeuvre, to be able to get into the right position to do things, even to manoeuvre to shut the door'*.

For some informants, it was the layout and configuration of the cubicle that was impeding the space of the unisex accessible cubicle and to toilet use. Adrian (C) found that sometimes *'space is blocked by fixtures placed too close to the door'*. Betty (C) found that *'boxing in' took up space, 'boxed in pipes make it smaller. One loo I measured was 1800 by 1260. You lose space. Architects and building control need a better design brief'*. In contrast, Abigail (A) felt that the cubicle's dimensions were fine but that *'as long as the*

cubicle is well planned and thought out it doesn't have to be as big as they make them. It's about the use of space opposed to the space itself'.

Katherine (B) felt that *'every toilet seems to be different… it depends where everything is placed. Sometimes the sink and fixtures obscure the space you've got. There's a big variation in size'*. Jackie (C) commented that;

> *'sometimes there's not much room. There's a small sink and an air dryer or there will be a towel dispenser but their not easily accessible because there's not much room for turning round. Although it's a big area it's not laid out very well… it hasn't been thought out'*.

Pam (C) thought *'there's a lot of clutter down one side of the wall'* and Billy (A) found that *'big fixtures and fittings get in the way'*. The NAfg described how *'the size of the cubicle depends on the layout and the position of the fixtures determines the space'*. This was echoed by the PAMIS focus group who explained *'sometimes it's not a question of space but how the toilet has been laid out. We think 'you could fit a changing bench in here' if only you moved this and that'*.

Similarly to the experiences of users of the standard cubicle, users who expressed a preference of for the unisex accessible cubicle commented on the lack of adequate space. However, unlike the artifact-artifact affordance relationship of the standard cubicle, the provision of an accessible cubicle would, at the time of data collection (up and during the implantation of Part 3 of the DDA) not be considered as standard and therefore not indirectly useful for users (and taken for granted to be provided). Where the unisex accessible cubicle is provided it can be considered within the framework of artifact-user-affordance and directly useful to users. This highlights a key difference in how designing for disabled people is considered a separate specialist issue, with the provision of an accessible toilet similar to a product to be added on.

6.6.4. Occupying the ambulant gendered cubicle

The provision of an ambulant cubicle situated in gendered provision was welcomed by a number of informants. Jack (C) thought that an ambulant cubicle was a *'great idea'* and that *'grab rails cost nothing'*. Both Alice and Dan (Cx2) expressed the desire for an ambulant cubicle that included washing provision. Alice told how her health condition can get *'messy'* so *'a cubicle smaller then the disabled cubicle but with some of the same fixtures would be perfect'*. Dan expressed a preference for the

> *'accessible facilities but an ambulant cubicle in the men's room would be ok as long as it had washing facilities and was private. The main thing is privacy and enough space for cleaning up'*.

Sarah (C), expressed a preference for an ambulant cubicle opposed to the unisex provision, describing such provision as *'bliss… a little more width, a smaller cubicle with grab rails and a raised seat, I don't need a huge space, just facilities that enable me to use the loo'*. Helen (C), who uses a walking aid felt that;

> *'the accessible loos are for people who use wheelchairs and are more space then I actually need. It's more important that I have grab rails and a higher seat so a larger standard cubicle would be ideal. But it would need someone to control it or everyone will use it so maybe would have to be locked under RADAR'*.

Similarly to Helen; Mary, Belinda, Nancy, Jenny and Pat (Cx5) also use walking aids. Mary commented that *'I would be able to use a standard toilet if it had grab rails and was slightly bigger'*, and Belinda said *'I feel I would benefit from an ambulant loo in the ladies, with a higher toilet and grab rails'*. Nancy told how she;

> *'use to use the ordinary ladies, but I've found over the last couple of years that I have greater difficulty getting up and down from the loo seat. I now need the hand bars. I wouldn't use the disabled loo if*

standard toilets had hand bars and a slightly higher toilet, the hand bars would be most useful'.

Jenny who uses standard as well as unisex provision would like an ambulant loo to include washing provision;

'I have episodes of incontinence so I think it would help to be able to clean up by the side of the loo rather than having to go out into the communal washing area, a standard loo with grab rails and sink would suit my needs'.

Pat found the ambulant cubicle in the ladies currently met her needs but added that *'I am conscious that as I age I'm going to have to use the unisex'*. Maria who uses a wheelchair described how;

'I do find it difficult to use the ladies' loos because they are too small but I could use an ambulant loo. I walk from the chair to use the loo. My only concern would be the queue to use it'.

The provision of an ambulant cubicle was also welcomed by Margo (C) to aid her use of crutches as *'when I use the standard loo I find there's not enough space between backing into the toilet and trying to close the door'*, and felt ambulant provision would *'help older people and reduce the pressure on the disabled toilet'*.

Informants of both genders who declared chronic health conditions welcomed gendered ambulant provision. Ambulant cubicles are becoming more prevalent within banks of cubicles, and therefore may extend the type of provision on offer and relieve pressure on the unisex accessible provision. However, ambulant provision is not standard and therefore similarly to the unisex accessible cubicle has yet to be integrated within buildings to become indirectly useful. Instead it falls within the framework of artifact-user affordance, directly useful to users but can be also conceived as a product for greater assistance opposed to integral to the building itself.

6.6.5 Occupying the Space Summary

A number of complex interplays arise when users consider the affordance of access to the toilet cubicle, and the occupation of the space. For many users, their initial decision of cubicle choice is based on physical attributes of either gender (male or female) or ability. These choices are often further catergorised in design as;

gendered (male/ female) = abled

unisex = disabled

Many users whose cubicle choices are based on ability would prefer their options to be gendered, whereas many users who may be considered able bodied prefer the affordance of a unisex cubicle, to meet their particular toileting needs. The majority of users of both standard and accessible cubicle types brought the issue of the space of the cubicle to the forefront of their experiences.

For both cubicle designs, the experience of space focused on its lack, due to either poor reproduction of the recommended spatial dimensions in the planning of the toilet cubicle and /or poor decision-making and placement of the fixtures and fittings within the cubicle. Fixtures and fittings such as the toilet roll holder (discussed in chapter 7) and/or the grab rail (discussed below) can be considered as nested affordances (Gaver, 1991) to the toilet cubicle, as the door handle is to the door.

For the majority of respondents both able and across the experiential disability categories represented here, the space of the toilet cubicle both accessible and standard, was too small. The one cubicle that received positive comments was the ambulant disabled cubicle; however, despite being more common as provision in a bank of cubicles, especially in female provision, there is only one ambulant cubicle provided, usually placed at the end of a row of cubicles. This increased distance to reach suitable provision may be difficult for users with mobility concerns to access, as well as not being

accessible to users who are required to take their turn in using the first cubicle available when queuing to use the lavatory. In terms of design, getting the cubicle size right, especially for single cubicle provision such as an accessible compartment, is vitally important, as this space may remain the same size throughout the life of the building.

The provision of the toilet cubicle as an essential element of a building has been presented within Maier *et al's* (2009) framework of artifact-artifact affordance (AAA) as one that is positive due to its indirect usefulness to users. This can be considered due to the acceptance that toilet provision will be on site and therefore taken for granted. Yet it cannot be taken for granted that such toilet provision will be accessible to all users and where provided provision will fall into the artifact-user-affordance framework (AUA), and therefore becomes similar to a product or even an assistive technology.

6.7 Feeling grounded

The floor of the toilet facility (both the space external to the cubicle and that of the cubicle itself) can be considered to be a prime example of Gibson's (1979) definition of affordance, and the design decisions regarding the floor as contributing to the affordance of access to the space. As discussed in the previous chapter, if the floor is flat, rigid and horizontal it should afford being stood upon, and walked on. Gibson also notes that differences in layouts may afford a different set of encounters. As Gavin (B) observed, *'having a flat surface or floor, not a step here and a step there… because it's a simple thing like that that can completely ruin an evening'*. In the provision of toilets, other factors than Gibson's noted 'flat, rigid and horizontal surface' arise, which may not afford access for many disabled people. These include whether the surface feels safe and therefore affords a sense of feeling grounded on the floor. The subject of the floor generated 50 quotes, with the narrative of this divided between concerns that the floor has been designed to be 'non-slip' and the experiences of encountering wet floors.

The need for a non-slip floor, was described by informants as *'essential'* (Carla) and a *'requirement'* (Belinda) (Cx2). Betty, Marsha, (Cx2) and carers Lisa and Joseph considered a non-slip floor a *'necessity'*, and Katherine (B), Margo and Jessica (Cx2) considered it to be *'vital'*. For Mary, Nancy, Jenny, Pat, Maria, Eileen (Cx5) and the NAfg a non-slip floor was an *'important'* design consideration. Helen (C), who uses a walking stick, described toilets that did not have non-slip flooring as *'like walking on an ice rink'*. Sarah (C) who uses a crutch to aid her mobility, found that in some facilities, linoleum tiles had been used *'especially around the sink area'*; that caused her to have *'slipped a few times'*. The issue of flooring that was slippery, was also raised by Dr A (B) who commented that *'sometimes the floors outside the loo isn't slip resistant'*. Dr A sometimes *'misses'* the WC pan, so she *'uses toilet paper to mop up after myself. I don't like having wetness on the soles of my shoes'*. For Joseph *'the floor has to be slip resistant to give confidence to both Barbara and me that's it's a non-slip floor'*.

Informants who use wheelchairs and scooters also emphasized the need for a non-slip floor surfaces. Adrian (C) required it as he leaves his wheelchair and *'stands to use the toilet'*. Sharon (C) leaves her scooter outside *'then uses my walking sticks to get in'*. Jeffrey (A) stated that *'slip resistant floors are important when getting out of the wheelchair and holding onto the grab rails, if you feel the slip beneath you, you're in trouble'*. Sally (A) found that sometimes a floor that is not slip-resistant causes the wheels of her wheelchair '*to slip, which could be 'dangerous'*. Jackie (C) described how she *'uses wheelchair for support when transferring so its important that floors are slip resistant'*.

A wet floor in the toilet facility was considered *'awful'* by Fred (C), *'dangerous'* by StCSFCfg, and a *'worry'* by Carla (C). For some informants, wet floors were directly associated with cleanliness and hygiene. Dr A (B) stated that *'I can't use dirty loos, especially if the floor is wet, I might fall'*. Glenda (C) commented that *'some are just too dirty to use, sitting there with your feet in a*

pool is worse. It could be a leak or cleaning but it's still very unpleasant. Slippery floors are a risk'. Danielle noted a wet floor as the *'one thing I hate about toilets. When the floor's really wet you think "why is that, why is it wet" … it's not particularly nice either'*. Mothers from the NCTfg felt that *'mums try not to get desperately concerned about hygiene, won't put a child on a really dirty floor but sometimes you have no choice to change a nappy on a wet floor'*. In contrast, Max (C) attributed the *'slippiness'* of the wet floor to cleaning. He found that *'they clean the floor with disinfectant but then don't rinse it off, so you have this greasy film which is super slippery'*.

Other informants associated the wet floor with the possibly risk to personal safety through slipping. Pat (C) stated that *'the main problem for me is if there is a wet floor. I'm very vulnerable to slipping so a wet floor makes me very nervous'*. Leah (C) also told how she needed *'to stand to transfer'* out of her wheelchair and that wet floors can be a *'hazard'*. Katherine (B) told how in the accessible cubicle;

> *'the big issue is the floor being slippy…. Water leaks out from the sink and goes all over the floor and makes it slippy. I pivot on my feet to transfer to the loo so it can be very dangerous if it's wet and slippy'.*

For other informants, the wet floor was a concern when removing clothes to toilet. Dan (C) cited wet floors as *'an issue when I'm taking my clothes off'*. Nancy (C) found wet floors *'difficult if wearing trousers'*. Colin (A) told how *'because of the need to remove trousers when change of bags is required or wetting has occurred, I like to use a toilet where the floor is clean and dry'*. Belinda (C) found that identifying if the floor is wet can be hazardous if the toilet is *'dark and dimly lit'*, as well noting that it's also *'difficult to keep trousers off a wet floor'*. Vicki found wet floors to be particular annoying;

> *'because you've got to put your bags somewhere and generally the little hooks on the back of the door are broken, so where are you going to put your handbag. While you lift your skirt and pull your knickers down or undo your zip and pull your trousers down. I hold my handbag*

in my teeth so I am holding onto my handbag, but if I have more shopping then that, what are you going to do?'

A participant in the NAfg tells the consequences of encountering a wet floor.

'at the garden centre the accessible loo is in the ladies so my husband goes back to the car to get my crutches so that I can walk into the loo. When I get in there. The floor is wet and the loo is too low, but I just have to manage on my own. Then the crutches skidded and I fell on the floor. I could hear people coming in but was too embarrassed to say I needed help. There was no alarm. It's only that I was in there for so long that my husband shouted 'are you ok?" I said no and my husband came in and had to unlock the door with a coin…'

Another participant of the same focus group added '*there's often wet floors and it takes nothing for me to go down on the floor'*.

6.7.1. Feeling grounded Summary

For some users, a surface that conforms to Gibson's affordance of being flat, rigid and horizontal may be sufficient. However, for other users such criteria may not on its own, afford them access. Here we see additional factors such as floor coverings, and the condition of the floor being wet, may make the flat, rigid and horizontal surface hazardous, taking away a sense of groundedness that the floor should offer and therefore not affording support.

Concerns about the floor being non-slip were expressed by a majority of female respondents who used walking aids, as well as Joseph and Lisa as carers of people who use wheelchairs. Male concerns came from those who used wheelchairs. Wet floors were a concern for all categories of disabled respondents, not only from a safety perspective, but also as a signifier of cleanliness.

6.8 Feeling Supported

In the *Accessible Toilet Resource*, Hanson *et al* (2006) reported that 30% of users found grab rails difficult to use. Within the accessible toilet there are six primary grab rails, as described in chapter 4 these are:

- The horizontal door rail
- Vertical rail (1)
- The drop down rail
- Horizontal wall rail
- Vertical rail (2)
- Vertical rail (3)

Informants made 87 references to grab rails, the narrative of which focused on the experience of each rail, as well as the configuration of use and layout of grab rails within the cubicle.

Grab rails can be considered a nested affordance (Gaver, 1991) within the unisex accessible cubicle (and the ambulant cubicle) in that similarly to a door handle to the door, the unisex accessible cubicle would not function without grab rails. Grab rails can also be considered to give artifact-user affordance (AUA) in which their inclusion is directly useful to users (Maier et al, 2009).

Some informants commented on the feeling of support that grab rails afforded. Tara (B) said that *'I like to have bars around me as it makes me feel more secure'*. Jeffrey (A) felt *'you can't have too many grab rails'* adding *'more rails would be nice'*. The MMfg thought grab rails were also good for children, as they *'would help them as well as something to hold onto'*. The PAMIS focus group felt that *'it would be great if every toilet had grab rails so that they became an everyday bit of equipment and not medical and scary'*. In contrast, some participants reported negative reactions to grab rails. Glenda (C) stated that *'I use to use the grab rails but don't anymore as I had a bad experience'*. Eileen (C) commented that *'I've seen grab rails coming off the wall so they don't make me feel very safe'*.

6.8.1. The experience of grab rails

The horizontal door rails produced enthusiastic comments. Miles, Richard, Helen and Pat (Cx4) found this rail to be *'fine', 'very useful', 'helpful'* and *'wonderful'*. Pam (C) found it *'annoying when there isn't a grab rails on the door'*. Mary (C) and Jeffrey (A) said that it was the only grab rail they used *'to close the door'*.

For Nancy (C) *'the only grab rail I use is the drop down one'*. Tara (B), visiting from the US thought the drop down rail was *'a good idea'*. Glenda (C) said that *'I use the drop down rail, although it can be a bit high'*. The majority of comments regarding the drop down rail focused on the difficulties participants experienced with this particular rail. In contrast to Glenda finding the drop down rails too high, Mary and Jackie (Cx2) found this rail *'too low'*. Participants from the NAfg commented that they found the drop down rail *'difficult to use'* and that they *'can't get the drop down down'*. Leah (C) also experienced this issue adding that *'it can be really stiff and I have to have a friend do it for me'*, and Jackie also sometimes had to get *'someone to do it [pull the drop down rail down] for me'*. Sarah (C) said she would use the drop down *'when I can get it down, at times I can't move it. If I can't get the rail down I will go and look for somewhere else to use'*.

The biggest concern raised about the drop down rail focused on the security of its fixture into the wall. Helen, Mary, Maria, Jackie, Marsha (Cx5), Jean (A), Katherine (B), Lisa, and the participants from NAfg all described the drop down grab rail as *'wobbly'*. Helen told how;

> *'in one toilet it's not fixed properly, it's half hanging out of the wall, I'm never sure if it's going to fall out. Every now and then they come and screw it in again but it's never done properly and soon works loose again'*.

Jean described how she *'once used a new toilet and the drop down came right out of the wall. It had been fixed with rawlplugs that you would use to put a shelf up… has happened a couple of times… especially since the DDA'*.

Maria finds the drop down rail *'has not been very well cared for'*, and Lisa and Marsha found getting the drop down rail in place *'a bit of a wrestle [that] makes the whole experience [of using the accessible toilet] really stressful'*. The difficulty of getting this particular grab rail down was also experienced by participants who found the rail lowered, and could not put it back up. The NAfg found that *'leaving the drop down down can be a problem'* and Pam commented that *'putting the drop down back [up] so that I can get in the transfer space is problematic'*. Miles (C) found the *'drop down has such varied designs, some are useless. They don't come down easily and they're difficult to put back afterwards. They're hard and cumbersome'*.

Some participants expressed a preference for using only the fixed horizontal rails found next to the WC pan. Richard, Jeffrey, Belinda (Cx3), Dr A, and Katherine (Bx2) all reported using only this rail. Belinda expressed a preference for the rail. Dr A used the rail to *'help me get onto the pan and off again'*. Katherine described how she *'can get by using the horizontal rail'*.

There are two or sometimes three[11] fixed vertical rails in the accessible cubicle (see figure 44).

[11] Some cubicles will include two vertical rails on each side of the sink, other only one. Guidance recommends two but this is often not complied with in furnishing the cubicle.

Figure 44. Vertical rails 1, 2 and 3

Miles (C) found vertical rail 1 *'useful to aid pulling self forward'* and didn't use any other rails. Mary (C) reported sometimes using vertical rails 2 and 3 *'especially if there is water on the floor'*. Pat (C) uses rail 2 *'to stand up, especially by the basin. I also put the sticks on there so that I can reach them and help with balance'*. Jackie (C) explained how she *'uses the fixed vertical [1] when transferring back to the wheelchair and getting dressed. It helps me get into a more upright position'*. Lisa found that *'not all loos have the vertical rails [2] on the right side so she (Marsha) can't pull herself up'*. Pam (C) queried the positioning of rail 1 next to the drop down rail, commenting *'if you need the vertical rail it's a bit of a reach past the drop down, I worry I could accidentally grab the drop down and have an accident'*.

6.8.2 Experiencing the configuration of rails and their layout

Many of the informants commented on the experience of using a configuration of rails to complete their toileting. Fred, Betty, Sharon (Cx3) and Jeffrey (A) all reported using the drop down, horizontal and vertical rails. Betty also commented that she sometimes *'uses the toilet seat'* for support as well. Jeffrey stressed that he *'just needs something to hold onto, so that if my legs give way there's something to grab'*. Tara (B), Margo, Eileen (Cx2) and Billy (A) reported just using the drop down and horizontal rails.

Other informants commented on the configuration of the grab rails within the accessible cubicle. Sarah (C) found grab rails were *'set too wide apart and I don't realise until it comes to get up and I find it difficult to push myself up'*. Katherine (B) mentioned *'problems reaching the fixed horizontal rail on the wall, if toilet [WC pan] was nearer it would be easier to reach the rail'*. Abigail (A) told how when transferring back to her wheelchair;

> *'there's no way it's [the grab rail] long enough. They need to be close to the loo so that it's literally like the arm of your chair; you can get a good grip and lift. I can't do a straight transfer if the rail is too far away, it*

takes longer and the toilet needs to be really big. I don't understand why almost all loos are like that'.

Abigail then asked;

'has anyone else mentioned the handrail problem? I think it might be a female thing because men are stronger; men seem to transfer much easier then I do. It's just too far away for me – there's no point in having it there'.

Leah (C) also found the *'space between the bars and the WC pan is sometimes too far. I have to reposition the wheelchair if I find that's the case and use that to lean on'*. Jessica found the fixed horizontal bar *'too far from the toilet'* and Fred (C) stated, *'I think the wall mounted bars are further away then is comfortable. Your having to hold on with whole length of arm rather than bent arm'*. (See figure 45).

Figure 45. Horizontal rail placed too far from the WC pan.

Philip (C) and Joseph also commented on the configuration of rails resulted in the rails often getting in the way. Philip found that if rails were *'fixed in the transfer space you can't do a safe transfer'* and Joseph found *'the drop down gets in the way'* when he's helping his wife to transfer onto the WC pan. Participants from the NAfg explained that the rails were *'too far away'* and *'in the wrong position'*.

As an artifact-user affordance (AUA), grab rails should be directly useful to users, yet from the experiences described here, this is often not the case. There may be a number of contributory factors for this from being taught to transfer in a specific way in a specific environment such as a hospital, which in itself may not have followed standard guidelines for placing grab rails, to personal attributes such as lack of strength or reach. However one contributory element must also be the lack of adherence to design guidelines as demonstrated by Hanson *et al* (2006) who found that whilst at least one grab rail was found in the majority of unisex accessible cubicles, less then 40% had the configuration of grab rails set at the correct height.

6.8.3. Feeling supported summary

For many users of the accessible toilet cubicle, grab rails are necessary in order to use the cubicle for its intended purpose. They provide important support and a sense of personal security and wellbeing for the users. Grab rails function, similarly to a door handle on a door, and therefore can be considered a 'nested affordance' (Gaver,1991) within the space of the accessible cubicle. However, in order to provide adequate support there needs to be an understanding of how they are used, as they are not necessarily 'grabbed'. In addition, some rails are favoured over others and some are used in configuration with others. In their affordance of support for users, grab rails, if fitted correctly, can also afford a sense of safety and security (to be discussed in chapter 8) when using the accessible cubicle. The majority of respondents who experienced difficulty with grab rails were female, and this ranged from the heaviness and insecure fittings of the drop down rail, to the placement of the other rails in the cubicle, some being too far away from the WC pan to afford the action of lifting themselves off of the toilet. Male respondents with disabilities who experienced difficulty with grab rails were those in category C, whose health condition may also impede their strength.

6.9. Affording wider access; sharing the facilities

The provision of facilities that afford the changing of a baby are considered important for accessing toilet provision. However, such provision is considered controversial due to the furnishings of baby-changing (a drop down baby change platform or bench) being placed in the accessible toilet cubicle. Hanson *et al* (2007) found that 'the issue of baby changing facilities (that are not themselves accessible) is another controversial aspect of the design of accessible facilities. 97% of disabled respondents felt that baby changing should be provided in a separate facility' (ibid, 2007:25).

The issue of baby changing generated 58 comments. The narrative of these comments focused on the resistance to share the provision and the need for inclusive provision.

6.9.1. Resistance to 'others' access of the space.

As Hanson *et al* have shown, the issue of baby change within the unisex accessible cubicle reveals sharp distinctions in the access and use of this space. This was also reflected in the comments made by informants on this particular issue. Fred (C) felt *'baby change shouldn't be in the disabled cubicle'* and Miles (C) stressed that *'baby change should not be in toilets'*. Adrian (C) thought *'baby changing should be removed from accessible facilities'*. Sally (A) found baby change *'can be a nuisance if there's only one toilet'* and Margo (C) *'finds a big problem with baby change in the accessible loo'*. Marsha (C) told how *'it really annoys Lisa when there's so much baby change and we can't use the loo'*, and a participant from the NAfg commented, *'I hate that the disabled is shared with baby change'.*

Some informants were more forthcoming as to why they did not want to see the unisex accessible cubicle also used for baby changing. Miles considered such shared provision *'an urgent issue… as you have to wait to get in, can wait up to quarter of an hour'*. Richard (C) also recalled that *'you have to wait a long time'* to use the toilet that doubles for baby changing. Dan (C) felt *'there*

shouldn't be baby change as it makes the cubicle unavailable when I really need to use it', and Helen (C) commented that *'if you need the accessible loo you can be in for a long wait'*. Nancy (C) feels the time element makes the case for *'baby change needs are different and provision for baby change should be separate, mostly because changing a baby takes time'*. Dr A (B) said *'I can't use the loos if they are shared with baby changing, it's just too long to wait, this frequently happens'*. Eileen (C) stated she would *'prefer it if there was no baby changing in there. I've had to wait because of baby changing'*. Betty (C) told how she had had to wait *'up to 20 minutes for a loo that was being used by a mum and the baby'* and that *'baby change provision needs loos in there for mums too'*. Jean (A) found that the time taken to use the facility is sometimes reversed, *'it can take me up to 20 minutes to go to the toilet and it can be difficult when there's an irate mum banging on the door'*.

The issue of space use within the cubicle for the fixtures associated with baby change was also raised. Miles (C) often found *'not only the baby change table left down but a chair in there as well, as well as bins. It makes it very difficult to use in a powered chair, there's just too much junk in there'*. Pam (C) felt there *'just isn't enough room for both, it can be a real nuisance if the table has been left down'*. Maria (C) also found the *'table often left down making access difficult in a wheelchair'*. Danielle (C) described how;

> *'there are people who really need access to the toilet so maybe [baby change] should have separate facilities because otherwise its quite difficult because there are two people who have separate needs who are vying for the same toilet and there's only one toilet'*.

Jackie (C) felt that the inclusion of baby change within the accessible cubicle was dependent on the amount of space available*, 'there's no concerns if the toilet is big enough'*. However, Jeffrey (A) felt that *'often the loo is taken over by baby change'*. Terri felt that *'one problem is that they try to combine baby changing with the accessible loo… it just pokes into the space and makes it*

more difficult'. Margo (C) described how in *'one local shopping centre [accessible toilet] is also baby change and I've never had access right away, so now I just don't bother to go there'*, and Maria (C) commented that *'some mothers are less than pleasant about you using the toilet, they think it's solely for their use, especially in shopping centres'*.

6.9.2. Affording access through inclusive provision

Billy (A) didn't mind baby change being in the accessible cubicle *'but as long as it's in the standard cubicles as well. If it's just going in the disabled loo, that's wrong'*. This was echoed by Jeffrey (A) who stated, *'baby changing shouldn't just be in the disabled loo but in the men's and women's as well'*. Matt liked the provision of baby change found at airports, *'at the airport they had them as part of the male or female toilets so as a parent you could decide which one would go in and does the changing. You're in the normal toilet'*. The MMfg felt the City's art galleries *'are really good, they have baby change in the men's loos so he can do it as well'*.

Jeffrey felt that *'if you're going to have baby change in the loo, that should also be made accessible. There are more disabled parents now'*. Betty (C) echoed Jeffrey's call for accessible baby change provision *'but it needs to be an accessible baby change area'*. Pat (C) thought *'baby change can be a disadvantage, especially if space is tight. It needs to be separate but also accessible'*.

The MMfg pointed out *'that's the problem with just baby change, there's no loo in there'*, and one of the participants, the mother of twins added *'it can take up 20 minutes to change them, I sometimes have to dunk them in the sink to clean them. It's handy to have a sink to wash them and a bin you don't have to touch'*. A participant in the NCTfg told how her partner *'would like baby changing in the men's loo's. He looks after our son two days a week and has to find places to change him. The disabled toilet is the only option but people do frown when he uses this, he feels guilty'*. Another participant

commented *'I use the disabled toilet because everything is in there with you. You don't have to move your stuff from one area to another whilst getting your dirty hands everywhere'*.

Belinda (C) wanted *'baby change separated. It's nicer to have a mother and baby room, to have their own facility, even a little toddler room as well'*. Jean (A) felt baby change should be provided separately *'especially in large department stores and shopping centres'*. Susan felt provision should be separated because *'it just doesn't feel right'* and Danielle wondered if there could be *'an area that's kind of bigger that someone can change a baby in and that's got a toilet that's not the disabled toilet, if you know what I mean'*. The need for access to the WC pan within this space was also raised by the PAMIS focus group who commented that *'an adult changing bench could also be used for baby change, but you still need the toilet [WC pan] in there'*. A participant from the NCTfg pointed out ;

> *'that's the problem with [separate] baby change facilities, they don't have a loo in there and they don't always have a basin – just a bench, so you have to use the loo anyway to wash your hands or go to the loo yourself'*.

Lillian commented;

> *'they don't consider the parents' needs, there's no toilet, so after you change baby you come out of that room with the baby, then try to get through doors to go into the ladies or go into the disabled'*.

6.9.3 Affording wider access; sharing the facilities summary

The inclusion of baby change within the unisex accessible cubicle arouses controversy amongst users. People with disabilities across genders and experiential categories - but especially those who require the extra space of the cubicle, find not only the space use difficult to physically negotiate but also the time taken for baby changing can be distressing, especially if one's health condition may include urgency to urinate and/or defecate. There is a need for

provision to meet the requirements of changing a baby, and this should also include hand washing provision and a WC for the parent. Currently, many facilities only provide a bench for baby changing making the provision of the accessible cubicle more attractive for users, but creating tensions concerning access to the provision between the perceived divisions of the able and disabled body.

Consideration can also be given to the role of child-care symbolised by such shared provision. Having a baby is not a disability but also a normal aspect of life. Yet grouping such provision may infer that having children is also a social anomaly. In addition, more disabled wo/men have children and they also need to be catered for. The sharing of space between the functions of baby changing and the use of the toilet for disabled people within the unisex accessible cubicle, may not only block use by the latter but does not necessarily afford access to parents with disabilities, especially if the baby change provision in itself is not designed to be accessible. However, baby change provision does require that the hygiene and toileting needs of the parent/carer also be considered, whether this is with the intention to afford access to the wider built environment for the parent/carer, or to ease population pressures on the unisex accessible cubicle.

6.10 Conclusion

This chapter has considered the affordance of access to the publicly accessible toilet. It has taken a 'whole journey' perspective (Evans and Shaw, 2009) to include the experiences of informants encounters with the environment when they need to use the lavatory.

Affording access to the lavatory includes considerations of orientating the body within the built environment, through signage, directions or cues from the built environment, to identify where the facilities are in the external space of the street. This brings together the reoccurring mental patterns or 'image schemata' grounded in peoples' experiences and the affordance of the built

environment as a process of way finding (Raubal and Worboys, 1999). Once the user has identified where the toilet is located, the navigation to the facility becomes the next series of design elements to consider the affordance of. Informants have described the challenges faced in this navigation with the negotiation of barriers such as stairs and turnstiles, and even interventions designed to afford greater access such as ramps, and shows how such element of the built environment have been considered as individual issues and not of the whole journey experience (Evans and Shaw, 1999).

In reaching the lavatory informants experience further design challenges that limit or frustrate access. The door affords entrance not only to the lavatory facility, but to the cubicle itself. Considerations of the affording characteristics of the door such as weight and swing all contribute to the doors overall affordance of access. Maier et al (2009) consider aspects of architecture as bringing either indirect or direct affordance to the user and incorporate the framework of artifact-artifact affordance (AAA) and artifact-user affordance (AUA) to describe this relationship with AAA being of indirect benefit and unnoticed by user, and AUA of direct benefit. The door can be seen to afford both AAA and AUA relationships'; being both of indirect benefit through it's given of being included within the environment and AUA through its immediate interaction with users.

As a nested affordance (Gaver, 1991), the door handle and the door lock, including those designed for the RADAR National Key Scheme, also present examples of inaccessible design and therefore potential barriers to access. These items of architectural hardware can also be seen to present an AUA relationship but often resulting in negative affordance. The floor as a surface that is flat, rigid and horizontal can be considered the prime example of Gibson's (1979) notion of affordance. Yet for many users the floor, even when meeting Gibson's criteria of affordance, is hazardous within the environment of the bathroom due to external factors such as poor decision making in floor coverings and water in this environment.

With an emphasis on an inclusive approach Greed (2003) proposes that current provision divides between ‘abled’ and ‘disabled’, and should be abolished in favor of a fully inclusive approach that requires more space. Greed argues that current guidance is shaped by the needs of wheelchair users who do not make up the majority of the population who are disabled. She notes that the use of the wheelchair logo as a symbol of disability and of the ‘disabled toilet’ presents a narrow stereotype of disability, which can exclude those, whose disability is hidden. This problem is particularly acute in respect of toilets locked as part of the RADAR scheme, as many people who may require the assistance provided in the accessible toilet but who do not ‘look disabled’ might be subject to verbal abuse on using the accessible facilities. Greed states that ‘locking might ‘protect’ the toilets but it makes them doubly inaccessible for all’ (Ibid, 2003;60).

On crossing the threshold of the door and being inside the cubicle, the occupancy of the specific cubicle (either standard BS6465 or unisex accessible BS8300) determines the affordance of access. Informers report that both designs fail to be correctly translated in the built environment, and that such poor design practice limits the occupancy and use of the space for its designated purposes.

The inclusion of toilet provision within a building, legislated for in building regulations can be seen as an indirect benefit to users, and similarly to a fire sprinkler system – available but not necessarily used. It can therefore be considered to be an artifact-artifact affordance (AAA) (Maier *et al,* 2009). However this relationship is not fixed as when directly encountered by users the toilet provision shifts to one of artifact-user affordance (AUA) and is of direct benefit to the user. Prior to the wider adoption of Part 3 of the DDA, the provision of an accessible cubicle could not be taken for granted to be offered in all buildings and hence did not present an AAA relationship but one of AUA and similar to a product that offers assistance. This highlights how provision of a separate unisex accessible cubicle can be seen as a specific add-on and

continuing the ‘special needs’ aspect of its design and incorporation into the wider building.

Within the accessible cubicle, grab rails can be considered a signifier of access, yet these features, as nested affordances (Gaver, 1991) and providing artifact-user affordance (AUA) (Maier *et al,* 2009), can also be hazardous and inaccessible to use and therefore if not installed correctly (Hanson *et al*, 2007) generate negative affordance. Finally, the inclusion of baby change provision within the accessible cubicle creates tensions between users, but must be considered as an affordance to access to the built environment for parents and carers, both able and disabled.

7. Affording Excretion; urination and defecation

7.1 Affording excretion

In the previous chapter, consideration was given to the users' experience of accessing the publicly accessible toilet, in regards to the journey to the facility. If we consider that the user has indeed found the provision and entered the cubicle we now need to assess how successfully the cubicle affords its primary use function, namely defecation and urination. As the receptacle for the majority of our bodily wastes, the WC pan is used by both sexes, although cultural variation such as men standing to urinate and women sitting or hovering, determines how the sexes use it. For men there is also the option to use the urinal and for men with disabilities, the urine bottle[1]. The final consideration towards affording urination and defecation is the use of toilet paper to clean the body after excretion.

In considering the affordance of excretion, the thesis moves from an architectural consideration to that of product design, as it is the artifacts that afford the experience. As in the previous chapter, such affordance of these products can be seen as nested affordances (Gaver, 1991), intrinsically associated with the space of the toilet cubicle as well as providing an artifact-user affordance (AUA) and being of direct benefit to the user (Maier *et al*, 2009).

In reflecting on the affordances of urination and defecation, 218 comments from informants followed three narratives, these focused on; capturing the products of excretion and the product of urination, and affording bodily hygiene.

[1] Women with disabilities can also use a urine bottle. However none I spoke with mentioned doing so.

7.2 Capturing the products of excretion; the WC pan

A total of 139 specific comments were made regarding informants' experiences of the capturing the products of excretion, namely through the WC pan. Narratives concerning the WC pan focused on how the design afforded its intended use and but also described the nested affordances of items directly associated to the WC pan.

In the BS8300 and Part M of the Building Regulations accessible toilet cubicle guidance, the WC pan is recommended to be set 500mm from the sidewall and 750mm from the back wall. In their audits of 101 accessible cubicles Hanson *et al* (2007) found that only 48 had placed the WC pan at the recommended distance from the sidewall and only 36 adhered to the recommended position from the back wall.

Abigail, who became a wheelchair user after an accident aged 19, told how when she was younger;

> *'toilets weren't so much of a problem… I could pretty much transfer onto any loo, high, low, with or without handrails. But it's getting harder now, as I get older I find it a real problem, especially with handrails, so the nearer the loo is to the wall the better'*.

Katherine (B) described a *'big issue is sitting balance, the toilet needs to be near the wall so that I don't fall down between the gap'*. Yet in contrast, Helen (C) who uses a mobility aid found toilets could be *'sometimes too close to the wall'*.

In addition to the position of the WC pan near the wall, the other issue that concerned informants was which wall the WC pan should be set against. Richard, Helen, Mary, Pat, Margo (C), Abigail, Billy, and Philip (A) all expressed a preference for a WC pan on the *'left side'* of the cubicle. Abigail described how *'I like a loo that's on the left, my heart always sinks when it's the other way around because I can't do the transfer as well'*.

However, Maria (C), Marsha and Lisa (C and carer) and Joseph (carer) all expressed a preference for a *'right-side'* WC pan. Maria described how '*I find it easier as my left side is paralysed. I will use loo on the other side but I find it harder'*. Both Lisa and Joseph, as carers, expressed a preference for a *'right sided toilet'* to help them transfer those they cared for.

Whilst the position of the toilet pan might first appear to be of personal preference especially with regards to its placement on the left or right side of the cubicle, it is also of note that from the audits of provision, over half had not been placed within the recommended distance from a wall (Hanson et al, 2007). This could account for poor artifact-user affordance (AUA) Maier et al, 2009) and the resulting negative affordance the placing of the WC pan results in. There appeared no significant differences between experiences of disability, age or gender in the poor positioning of the WC pan in the unisex accessible cubicle, hence it can be suggested that this is not an individual or personal preference, but a failure to adhere to guidance recommendations.

The WC pan within the accessible cubicle is recommended to be at the height of 480mm. Hanson *et al* (2007) found that only 34% of audited toilets were the correct height, and that the height of 'the WC pan can be considered one of the more controversial aspects of toilet cubicle design' (ibid,2007;44).

Fred, Miles, Abigail, Betty, Tara and Katherine all found the height of the WC pan to be adequate or *'ok'*, measuring their experience against the height of the seat in their wheelchairs. Miles described how the *'height of the loo is about right in a manual chair and in my electric chair I just adjust the height of the seat'*. Katherine also found the height of the WC pan depended on which chair she was using, with a higher WC pan *'more difficult in a manual chair'* but *'ok'* in her electric chair. Abigail recalled how she felt the WC pan *'use to be higher'* and that this caused a lot of problems previously, but that the height *'over the last few years has been right'*. Tara felt the WC pan *'was a*

good height'. Tara (B) used her scooter to support her and *'carry's a small step stool so that I can get up to the toilet'*.

For some informants, their experiences described how they found the higher toilet in the accessible cubicle problematic. Colin and Billy told how the higher WC pan was difficult for emptying their urine bags. Colin said *'sometimes lifting my foot is a big strain because of my back injury'* and expressed and preference for a *'drain unit'* that he could *'rest my foot on'*. Billy who also *'lifts my foot to empty my bag'* and found *'high toilets really hard work, especially later in the evening after a couple of pints'*.

Both Pam and Eileen (C) use mobility aids, and commented on the difficulty they experienced with the height of the WC pan. Pam found *'some toilets too high'* and Eileen described how even in toilets *'designed for disabled people, the toilet pan is too high.* She added that she often found *'WC pans are heightened by a platform'* and as a wheelchair user this was *'just no good for me'*. Jack and Philip (A) also expressed a preference for a *'lower WC pan'*. Jack said that his preferred provision does not have a raised toilet but a *'standard domestic height, higher toilets cause problems'*. Philip described how;

> *'if I see a high toilet my heart sinks because I know it's going to cause problems. I end up sitting on it as if perched, it's very precarious and unsafe. I'm 6'1" but find my legs are not firmly on the floor and if I get a spasm it tends to pull me forward and I can tumble off the toilet'*.

Davina from the NAfg described how she is able to use the standard and accessible provision, but found that recently she had *'difficulties using the disabled loo as I'm currently having surgery and find the WC pan too high'*. Alice who did not use any mobility aids found *'getting on and off the toilet difficult'* and that the raised WC pan were not good for her to *'evacuate my bowels'*.

Other informants experienced the height of the WC pan as too low, even when set at the correct height of 480mm. For some informants there was a desire for the pan to be even higher. Helen described how the issue of the WC pan height was *'a great concern'*, Nancy stated that *'a higher toilet bowl would be better'* and Glenda stated that *'the WC pan is too low'*. Dr A found that with regards to the height of the WC pan *'there is a real difference in loo design and I grumble a lot about it'*. Sarah expressed a preference for a higher WC pan but commented that *'this is where I have a problem, as the loos I've used don't appear to have a higher pan'*, and Leah found that the height of the WC pan *'varies'*.

Informants described why they preferred a higher pan. Jack *'likes a higher toilet pan because I have difficulty getting up and down from a low toilet'*. Sarah liked a higher pan as *'if its higher I don't have a problem getting up and getting down and risk hurting myself'*, and Belinda's preference for height was due to the *'difficulty sitting on the loo and trying to get back up'*. Maria would like the pan to be *'a wee bit higher… I sometimes go down with a bump'*. Jackie finds toilets too low '*even when I'm able to get on and off unassisted, if they are lower I can't get off'*. Carla described how to avoid the problem of a toilet pan that might be too low, *'I don't sit on the loo… if I'm having a pee I hover and hold onto the chair… I might not be able to get off if I sit down'*, and Margo stated that *'if the WC pan is too low I just can't use the loo'*.

Informants' experiences appeared to leave them with a good judgment for their ideal height of a WC pan. Pat described how it *'has to be a minimum of 480mm'* and Jessica and Sharon stated they needed *'a high WC pan, around 19"s'* (approx. 483mm). However, other informants requested a desire for an even higher WC pan. Betty commented how the height of the WC pans was *'not on the ADM template'*, and expressed the desire for a toilet at *'500mm height'* (19 ¾"s). 71 year old Philip felt a higher WC pan *'would be more help… I would have the top of the seats at least 20"s* (510mm) *off the floor, because I should think that 90% of people would find it easier then having*

them too low'. Jean felt she required a WC pan that was *'21"s'* (approx. 533mm) and Mary wanted *'another couple of inches'*. Lizzie also stated that she *'requires 21"s'*, adding *'its recommended that people with joint, knee, and hip replacements don't use low loos'*. Helen *'would like a loo up to 22"s'* (approx. 560mm). Pat explained how her *'home loo is 530mm'* (approx. 21"s), '*so I need the 480mm pan as a minimum'*. Joseph described how he *'has to lift Barbara out of her chair, swivel her round on her good foot and bend over with her'* to settle her on the WC pan, *'so we need the toilet to be high. Ideally another 6"s higher* (25"s / 635mm) *so the carer doesn't have to bend'*.

The shape of the toilet bowl was also mentioned by some informants. Dr A who has a fixed hip described how;

> *'I need a long shaped toilet bowl as I need to sit all the way back. When I sit on a rounder toilet my urine goes between the seat and the pan so I end up messing up the floor, and then its difficult for me to clean up'*.

Dan found '*the toilet shape can be weird. There's not enough room at the front and you end up dangling things on the porcelain. Some of them are not designed for men'*. Jack echoed Dan's experience commented that, *'sometimes the toilet bowl will be too small and my penis will touch the toilet seat'*.

Within the accessible cubicle, the height of the WC pan is noticeably higher then that of the standard cubicle. Amongst informants, no clear pattern emerged concerning gender or experience of disability with regards to the height preference. The correct height was only found in a third of audited provision (Hanson *et al*, 2007) suggesting that users had, by and large, not experienced the recommended height and therefore based their narratives on existing design that did not meet guidelines. Whilst the height and shape of the WC pan can be considered an artifact-user affordance (Maier *et al*, 2009) and in some of the informants experiences resulting in a negative affordance,

this is based more on the providers decision to install an incorrect WC pan opposed to an inherent design fault with the artifact itself. This can therefore be seen as a failure to afford the purpose of the design and therefore reflects a failure to provide the required systems behaviour within the affordance framework (ibid, 2009).

7.2.1. The nested affordance of the WC pan; the toilet seat

The narratives that framed informants experiences regarding the affordance of capturing the products of excretion, also described the nested affordance (Gaver, 1991) of the toilet seat, specifically its affordance of stability and robustness. There is no guidance on the fixtures or preferred type of toilet seat, and therefore design decisions regarding this, may or may not be suitable for purpose.

Jack stated that he needed '*a toilet seat that was solid and stable'*, Mary required it to be *'sturdy and secure'*, Sarah and Betty need the seat to be *'secure'*, and this is also a requirement for Helen as *'I tend to fall down rather then sit down'*. Maria, Margo and Pat felt it is important for the seat to be *'secure'* as they *'sometimes use the seat for leverage'* or *'support'*. Belinda also *'uses toilet seat for leverage, especially in desperation when the toilet pan is too low',* whilst Nancy *'relies on the toilet seat to help with leverage, so it's important that the toilet seat is secure'*. Jackie sometimes felt *'insecure because of a loose toilet seat'*, and Pam described how she *'uses the toilet seat to grab when transferring, so it's important that it is secure and clean'*. Dr A told how she *'needs the toilet seat to be secure because I don't sit in a normal position I could slip off'*. Sarah, Betty, and participants from the National Childbirth Trust (NCTfg) and Nottingham Arthritis focus groups (NAfg) stated that it was important that the seat did not *'wobble'* or *'slide'*. Jean stated that '*I can't use the facility if the seat is wobbly'*, and Tara added that *'I feel unsafe if it wobbles. I can't reach the ground so a wobbly seat is dangerous'*. Eileen recalled how the experience of a badly fitted toilet seat had deterred her from using publicly accessible toilets, *'one time… the toilet seat*

wobbled and it really scared me so now I just try to hang on until I get home'. Using the seat to aid transfer from the wheelchair, Fred described how;

> *'If I transfer to the toilet I sometimes use the seat… so it's important that it's secure. Also sometimes the cheap plastic ones can catch you. I prefer a contoured seat although a heated seat would be nice, especially in exposed loos like those in the countryside'*.

Leah also expressed a preference for a contoured or padded seat *'as I'm very bony and it can be painful'*. Billy finds hard seats *'incredibly uncomfortable and they are bad for your skin. My bowel regime might have me sitting on the loo for half an hour and I can get pressure sores'*.

Miles told how if the toilet seat is not strong enough for the transfer there can be *'a strain on the hinges, I've broken a few toilet seats in my time because of this'*. Glenda admitted how she had *'broken a few toilet seats in my time…I'm 20 stone, I can come down with a bang so those plastic ones can be dangerous'*. Eileen also described how she has broken toilet seats when she *'drops down'*. Dan commented that the seat needs to be *'sturdy and unbreakable… as if it's loose it can catch you'*, and Sally described how she; *'uses the toilet seat to transfer so it needs to be clean and stable. I scratched myself on a toilet seat once and I have to watch for pressure sores'*. Abigail also stressed the importance of a secure toilet seat;

> *'It is important to have a really good loo seat that doesn't come off. If you just have an ordinary seat with plastic lugs they come off really easily when your transferring sideways, especially if you have to turn the wheelchair around, because I'm dragging the loo seat with me'*.

Abigail continued to describe how a poor toilet seat had created health problems for her;

> *I had a really nasty pressure sore from a loo seat in Brighton. I caught my skin on a sharp bit, it was only a little cut and I thought I'd be alright but after a couple of days it began to get nasty and now it's taken 4-5 months to heal. It went into a pressure sore because I was sitting on it.*

I have to have the district nurses come everyday … just from a tiny cut when transferring from a toilet'.

The affordance of urination and defecation cannot be completed for many informants without the inclusion of the toilet seat. This nested affordance (Gaver, 1991) provides a barrier between the body and the material of the WC pan which informants will not sit on. It is therefore essential that a toilet seat is included in provision. However, the quality of the seat also needs to be considered as it needs to be robust to withstand the 'bump down' of the ageing body's failing hips and knees, as well as the 'transfer' of the body that requires the mobility aid of the wheelchair. Such lack of attention can have quite extreme consequences as described by Abigail. Informants find the lack of attention given towards the comfort of the seat can be a barrier to excretion, especially in accessible provision in which users maybe seated on the WC pan for a considerable time.

Audits of toilet provision (Hanson *et al*, 2007) did not determine if the toilet seat was robust for transference, possibly due to the lack of any guidelines on this artifact and its inclusion within the toilet environment. The toilet seat is integral to the WC pan for comfort and hygiene, and as such is not only a nested affordance but also within the framework of direct benefit to the user and an artifact-user affordance (Maier *et al*, 2009). However, as with the WC pan, the choice of WC seat is vitally important for this furnishing to fully afford successful excretion. Poor decision-making on the type of seat and the security of its placement can have, as Abigail's experience shows, health and safety consequences. Hence, the WC seat, whilst not specifically failing to afford excretion can, due to inappropriate choice of design, result in negative affordance and can be seen similarly to he WC pan as a failure to afford the purpose of design (ibid, 2009).

7.2.2. The nested affordance of the WC pan; back support in the accessible cubicle

A distinctive furnishing of the accessible toilet cubicle is the inclusion of a back support behind the WC pan. Hanson et al (2007) describe how the backrest is recommended where the *'cistern is built into the duct and hidden'* however, *'cisterns can also be used to lean against, although, a cistern with an overhanging lid maybe uncomfortable for users'*. In their audit of the accessible toilet cubicle they found that 64 of 101 had provided a backrest or cistern to lean against, although the audits did not discern between the two. As Billy described above, many users of the accessible toilet cubicle may be seated on the toilet for much longer then the standard cubicle user. A backrest, if it is padded, not only provides comfort but also helps the user support their body.

Despite the inclusion of the backrest in the fittings and fixtures of accessible toilet design guidance, there is no indication of the dimensions of how this item should be incorporated, resulting in frustration for many of the users it is there to support.

Fred described how *'those backrests are trouble as you can't get the toilet seat to stay up with them – they need to work that out'*. This experience was echoed by Miles, who stated, *'toilet seat covers[2] don't stay up the same way and the toilet seat doesn't stay up, the back comes too far forward'*, and Richard also commented how he had *'problems keeping the seat up'*. Adrian described how he *'prefers to stand when urinating, but sometimes find the padded support at the back of the pan prevents the toilet seat from staying up'*. He added, *'I often find the toilet seat has a cover which covers the backrest and prevents the toilet seat staying up'*. Billy found that when *'emptying the bag I put the seat up and it won't stay up, I have to put it down*

[2] It is interesting to note that Miles includes the toilet seat cover in his comment, as guidance recommends that the cover is removed or not included in the accessible toilet. Not only because it acts as a barrier to the backrest but that it also impedes users transfer from the wheelchair.

again and might make a mess. If they can't design it to make it work, I can't be held responsible'. Sally found that the backrest was sometimes *'too far forward… sometimes too far back'*. Jean described how for her, a poorly positioned backrest can impeded her use of the toilet;

> *'[my] trunk control is very poor, the level of the spinal injury is T4 just under the armpit. My spinal support is not good so I need a backrest… I sit far back on the loo as I need to wiggle out of my clothes and then I need to lean back to pull them up'*.

Tara found that the backrest acted as a barrier to her flushing the toilet as she *'can't reach the flush because of the backrest'*. Dr A described *'that backrest'* as *'impossible. I can't sit back because of the way I sit on the loo'*.

Informants described how the backrest found in the accessible cubicle became a barrier to accessing the WC pan depending on how far it was set on the back wall. Set too far forward, it impeded lifting the seat to urinate, or sit securely on the WC pan. Set too far back, it required informants to sit too far back for support of their use of the WC pan. It is suggested that the current inclusion of the backrest is assumptive, and does not consider how people with disabilities actually use the WC pan. Although, the backrest could not be considered a nested affordance to the extent of the toilet seat, there is an important relationship between the backrest and the WC pan, that of artifact-user affordance (Maier et al, 2009) and that if not carefully considered can act as a barrier to using the accessible cubicle for its primary purpose.

7.2.3. Toileting children

Comments were made regarding the affordance of the WC pan for the toileting of children. Allan suggested that within the disabled cubicle there could be *'some form of step for children and people of short stature'* as well as *'a multi-sized seat including one for children and smaller people'*. The participants at the NCTfg also called for *'a step up'* or the provision of a smaller WC pan. Experiences were shared concerning the inappropriateness

of the toilet seat for toileting children on a standard height WC pan, one mother told how;

> *'the toilet seat is too big for a toddler, sometimes she is not sitting back far enough because she has to hang onto the toilet seat and her wee shoots forward through the gap between the seat and the loo soaking her pants'*.

Another mother described the process of toileting her child was;

> *'hopping up onto the loo she always puts her hands on the loo seats. Grab rails wouldn't help but a step up would. When they're little and just starting [toilet training], it's the height that's the main problem. A small child seat would also help, might not have to hold on once their on there'*.

In addition this mother described the problems she faced toileting her child;

> *'you still have to lift them, and trying to do this whilst pregnant is difficult in the space. Then when you're not pregnant and have a bad back trying to lift a larger child onto the toilet is also difficult. A four year old can be quite big but still not be able to get onto the loo unless she puts her hand on the loo and jumps up and I'd rather she didn't do this in public loos'*.

Another mum commented *'if there were steps for the kids in loos it would also help me when I'm constipated'*.

The Manchester Mums focus group (MMfg) described their experiences toileting their children. One mum who had lived in Central America described Manchester's city centre provision having;

> *'… no loos for him. No mum and child loos, no little toilets and they don't have a seat that adapts. He's frightened he's going to fall down the loo. So I have to carry a child seat around or kneel down and hold his hands. He had a real fright and was crying because he was so*

scared. In El Salvador they had little toilets and a smaller height washbasin for children'.

Another mum explained how;

'sometimes there seems like there's a lot of baby change but nothing once the child is older. My daughter is getting bigger and her legs are hanging down [from the toilet seat]. Children are not toilet trained until two or three but baby change excludes after the first year'.

The MMfg agreed that *'a child seat on top of the adult seat would be good'*. One mum added that, *'I'd put one of those in the home because some child toilet seats move and they can end up falling off'*.

The lack of suitable provision for children, especially within services predominately directed at young children, (from food outlets to playgrounds), also neglects affording the developing bodies accesses to urination and defecation. Greed (2003) argues that poor provision for women can symbolise the paternalistic planning of the city in favour of the male body. Similarly, such oversight in affording provision for children can be seen as indicative of cities being "for adults only".

7.2.4. Capturing the products of excretion; Asiatic toilets

In 2010 the managers of a Rochdale Exchange Centre installed two Asiatic or 'Nile Pan' toilets in the shopping centre. Ghulham Rasul Shazhad explained how this action was prompted from finding 'a lot of empty water bottles by the Western public toilets in Rochdale' (BBC, 2010). However the toilets were then taken out after becoming a national media controversy. Rochdale Borough Council, who described how if they had been consulted they would have been against the idea, put pressure on the shopping centres parent company to remove the pans. Councilor Farooq Ahmed described the toilets and the resulting media coverage as 'an embarrassment to Rochdale' and that the decision had agitated racial tension in the area (Johnson, 2010).

Informants also discussed the use of Asiatic toilets, where the pan is set into the floor for squatting over. Dan (C) felt that, *'a Muslim style toilet with a showerhead would be ideal… sometimes I have to go home because I can't clean up properly'*. However, Ahmed described how;

> *'first generation Caribbean people have historically used squat toilets in the bush but I feel that for older people these are difficult to use. I prefer the standard UK toilets. Squat toilets are a no no because I have back problems'*.

A participant from the NCTfg told how she had experienced *'squatting'* toilets on;

> *'family holidays… they were usually clean but difficult for children to use. There was usually a choice for Asiatic or Western… and if there was no queue for the Asiatic I'd happily use'*.

Participants in the Manchester BME focus group also commented on Asiatic provision. Jamila echoed Ahmed's comment saying;

> *'when I was younger this was the only type of facility available and I could use it but not as I'm getting older. I think older people and children born in this country would not want to use them'.*

Ibrahim commented that Asiatic toilets *'are definitely not for me, and I know many British Blacks who would be horrified at using them'*. Amy added that *'in Africa they are common but much cleaner, they are appropriate for that environment but not for Britain'*. She continued;

> *'I use Mosque toilets because others are considerate enough to leave the toilet clean for the next person. There are mixed toilets at most Mosques, some are squat some are raised'*.

Jamila added that; *'I've been to Regents Park Mosque and in the ladies they had mixed squat and standard toilets and the women were queuing for the raised style'*.

Whilst the Asiatic form of toilet furniture is common in UK Mosques, there was resistance from informants for this design to be installed on a wider level of public provision. There are currently no recommendations for installation of Asiatic toilets within communities that might appear to have a preference towards this form of toileting, and it would be an imperative that wider community consultation was undertaken to establish if such provision would be desired.

7.2.5. Capturing the products of excretion summary

For many users the primary method of capturing the products of excretion is through the use of the WC pan. It is used by both sexes of all ages and abilities, and has changed little in design since the 'pioneers of sanitary pottery… the Twford brothers' introduced the pedestal water closet in 1848 (Blair, 2000). Although, there are variations in the design of the WC pan (smaller heights for children and higher pans for people with disabilities), the former is rarely found outside of age related schools[3], whilst the latter is only sporadically included within the design of the accessible cubicle, despite being referenced as a requirement within design guidance.

In affording urination and defecation, the WC pan appears to incorporate a number of nested affordances, a relationship with another artifact similar to the door and door handle (Gaver,1991). For the WC pan, its nested affordance is the toilet seat. In the standard cubicle it is required for sitting on by both sexes, as well as supporting children in the absence of a child sized WC pan. In the accessible cubicle it is often used as an aid in transferring to the WC pan for men and women who use wheelchairs.

Such nested affordance is not required in the Asiatic toilet, and if considering inclusion from an ethnicities perspective, such toilets should also be provided and be accessible to disabled people who share such cultural preferences.

[3] The Swedish furniture company *Ikea* appear to be the exception to this rule, as many of their stores include 'family toilet' provision that incorporates a smaller WC pan.

However, the informants spoken to within this research were adamant that such provision would not be suitable in the UK. Indeed, where the option between Asiatic and pedestal provision is given in the same facility, informants experienced queues in preference of the pedestal style.

The inclusion of the backrest in the accessible cubicle appears to have not been considered in regards to configuration measurements. For many male users of the accessible cubicle, the poor configuration between the backrest and the toilet seat, that prevents the seat being lifted for urination, causes frustration. It maybe suggested that such misalignment, may not have been considered due to an assumption that men with disabilities do not urinate facing the WC pan and/or stand up from their wheelchair to urinate.

7.3. Capturing the product of urination

For the capture of the product of urination specifically, the urinal is the most common item of interior furniture of the toilet cubicle. The urinal is found in the men's publicly accessible toilet provision[4], and has two basic designs of the bowl (figure 46) and the trough (figure 47). These may present themselves in a myriad of design variations (figure 48), which may or may not make the urinal accessible to men with disabilities. One of the striking differences in provision between the genders will be the inclusion of a urinal set at a lower height for boys in many men's toilets, whereas a smaller pedestal for girls, and children of both sexes being toileted by their mother, is rarely found in the women's facilities. Male informants described their experiences of how the urinal afforded urination.

[4] Penner (2001, 2009) also records instances of the development and installation of female urinals. However, these are not in common use and were not observed or commented upon during the course of this research.

Figure 46. Bowl urinals with lower placed provision for younger males.

Figure 47. Trough urinals

Figure 48. Novelty Urinal

Male informants were not particularly in favour of using the urinal. Jack described *'problems due to my height. I'm 6'3"s so when I use a urinal I get really bad splash back'*. Dan also didn't like *'bowl urinals because of splash back'* adding that managing urinary incontinence that it was particularly annoying as, *'it can look like you've wet yourself when it's the one time you haven't'*. Ahmed remarked that he was *'not comfortable using urinals because of my faith. There is not enough privacy and splash back makes prayer and going to the mosque invalid'*.

Craig (B) didn't like using the urinal because *'I don't like the idea of standing next to men, especially as I might have difficulty locating the urinal, it's usually white on white'*. Jeffrey who used a wheelchair said that he *'hates using urinals, the person next to you can see you. I've only used a couple of times'*. Nigel felt using a urinal *'isn't particularly nice'* due to;

> *'people standing next to you squashing you in. From a male point of view I don't want to be doing something next to some stranger and sometimes you don't relax enough to go, and you end up standing there for longer'*.

Miles and Billy told how they improvise when they are unable to use urinals due to their mobility aids. Miles explained how;

> *'I can't use the urinal because I can't stand…. it's not the right height, even the boys height; I can't get my knees under it. So if there's a urinal I can't use I get over it by urinating in a plastic bag and emptying that down the loo. A trough urinal would be ok but there's usually a step up to get to it'*.

Billy described how he only used urinals;

> *'in dire emergencies, if there's no accessible loo and no dark corner, I might just manage to get my foot up to the urinal but typically it's too high. Have come across kids urinal height but always go to the disabled toilet first before going to the gents and using urinal'*.

Billy also compared the urinal to the WC pan expressing a preference to the pan because its *'still better then trying to get my foot up on the normal urinal… but a lower floor urinal like in Japan would help'*.

Adrian didn't mind urinals as much but had a preference for design, *'I prefer a bowl urinal, and I would use them more if they had grab rails to support me'*. One of the participants from the St Charles Sixth Form College focus group also expressed a design preference, *'I don't like trough urinals, they have to be at least waist height bowls. I'd like a screen around urinals, and you don't use the one next to someone, that's the law'*.

Mothers from the NCTfg were the only women to discuss urinals. One mother said,

> *'I'd be happy to see urinals for young boys in the ladies toilets. It would save them from dribbling all over the seat. I don't think it would be too much of a concern to have them in the open in the ladies'*.

7.3.1. Capturing the product of urination summary

In general, urinals are not considered by informants to be accessible or even to be the preferential choice for urination. For those informants who do not mind using the urinal there is a preference in which design type they use. It is of note to see that the women who discussed urinals felt no reticence in the suggestion of a children's urinal in the female provision. This is often found in public toilets in Japan (figure 49), as are urinals fitted with grab rails (figure 50).

Figure 49. Urinal in Japanese female provision.

Figure 50. Japanese urinal with grab rails.

Urinals are predominately found in male toilet provision, and were not particularly favored by the male informants. Currently, the inclusion of urinals

within provision, affords more facilities for urination within a certain space, and often helps double the parity of toilet provision for men in comparison to women (Greed, 2003). There appears to be a gender bias in this failure of design in which the affordance of urination of the urinal is catered to for young boys in many instances of standard provision. However, urinals at a height suitable for men (or even possibly women) who use urine bags are not found in the UK accessible cubicle, whilst urinals for young boys to help mothers' toilet their sons, are also not found in UK female provision.

7.4. Affording bodily hygiene

To afford bodily hygiene the use of toilet paper is the most common method to complete excretion. In the UK, Europe, the Americas and Australasia toilet paper is the predominant way to clean the vagina and anus after urination and defecation. In the Middle East and some Central and Eastern Asian countries, the predominant method is to use water for post toilet cleansing.

Given that toilet paper is predominantly used in the UK, it is important that users can access this with ease. Toilet paper affords cleansing and therefore its access and use is an important part of the toileting ritual. It is also important to clean oneself for personal hygiene, especially the anus after defecation.

The provision of toilet paper can be considered a nested affordance of the toilet cubicle. However, a new category of affordance association is suggest, that of a *sibling affordance* of the toilet paper dispenser to the WC pan. Here the artifact has a direct relationship with another artifact but both are also is independent of each other. It is not a nested affordance, as it does not directly correlate to the artifact such as the door handle to the door or the toilet seat to the WC Pan.

Respondents' experiences of access to and use of toilet paper toilet paper followed the narratives of location, design variation and service provision,

suggesting this specific artifact's relationship to the WC pan as well as it's direct use to users through the artifact user affordance framework as well as a degree of purpose of this specific artifact (Maier *et al*, 2009).

7.4.1. Affording bodily hygiene; the location of the dispenser

In design guidance for the accessible cubicle it is recommended that the toilet paper dispenser be of the single sheet model and fitted above the grab rail on the wall closest to the WC pan. In Hanson *et al's* (2007) audit study, the research found that only 20 of the 101 facilities audited had included the correct single sheet toilet paper dispenser. As current guidance did not recommend configuration dimensions, the researchers recommended it be placed at a height of 800 – 1000mm from the floor and 750mm from the back wall, so as not to impede use of the grab rail below, and to avoid users having to reach behind themselves to access toilet paper (ibid, 2007). There is no specific guidance for the toilet paper dispenser for the standard cubicle.

Sarah commented how she *'often finds things like toilet paper in an inaccessible place, I can't reach the dispenser'* and Betty found that the positioning of the toilet paper dispenser *'can knock out the grab rails positioning'*. This was echoed by Pat who said *'it has to be carefully placed so that it can be reached. Sometimes they put the dispenser too far back or blocking the rails'*. Derek felt that *'where they put the toilet paper, is not always accessible, especially for ladies, you can't always reach'*. Participants from Nottingham Arthritis focus group commented *'often I find the toilet paper out of reach. I can't get my arms out to stretch round and get hold of it'*. The MMfg voiced equal concerns, *'you need the toilet paper to be accessible, you've got to be able to get hold of it and they (children) have to too'*.

Where the dispenser was placed was also coupled to the dispenser type for some informants. Tara found the toilet dispenser *'too low… I can't get my hands underneath to reach the paper'*. This was particularly an issue if the

recommended dispenser had not been used. Maria described how the toilet paper dispenser was;

> *'sometimes difficult to get to. I sometimes have to take the toilet paper before I sit down as I would not be able to reach it when on the pan. Polio affects my turning so I find it difficult to turn or go back in any way. So toilet paper placing can be difficult and in an awkward position. Those big rolls are awful, trying to find the start. I would prefer a single sheet dispenser'.*

Margo echoed Maria's experience, *'it can be really awkward when it's a roll, the positioning where its too far back and you have to turn around to reach it. Single paper dispenser would be easier'*. Marsha and Lisa also felt *'toilet paper dispensers seem to be in the wrong place, too far back, and those big rolls are just not good'*. Glenda commented that *'toilet paper that's out of reach on the roll can be difficult to use'* and Eileen stated that she would;

> *'prefer a roll of toilet paper rather then those individual sheets. But it's sometimes positioned so far back from you that you can't reach behind to get it. But not those big rolls'*.

Informants' experiences of where the toilet paper dispenser is placed echo those of the placement of the WC pan, although the latter has been set within guidance. The lack of corresponding placement guidance for the toilet paper dispenser has resulted in many users being unable to access its provision or only do so with difficulty. This may also be accounted for due to the poor adherence to guidelines for the type of dispenser to be used in accessible toilets (as discussed below) (Hanson *et al*, 2007). However it can also be framed as a failure of purpose within the affordance framework as suggested by Maier et al, (2009).

7.4.2. Affording bodily hygiene; dispenser design variation

The recommended single sheet dispenser was preferred by Adrian, Glenda, Helen and Jessica. Jessica added that she preferred this type of dispenser as

she found it physically easier to *'pull rather then tear'*. Yet, Helen and the participants from the Nottingham Arthritis focus group also noted that the single sheet dispenser could become inaccessible if *'packed too tight'* causing *'too many to come out at the same time'*.

Where the recommended dispenser had not been installed in the accessible cubicle, often a large drum dispenser had been provided (figure 51). Informants found this type particularly difficult to use. Richard commented *'I can't use those big rolls, I can't get my hands up to get the paper out. I carry my own now, I never rely on there being any that I can reach'*. Alice told how;

> *'big rolls get stuck and you have to ferret for the paper end and you end up tearing off confetti… then you give it a good tug and you end up with a stream of paper all over the floor which you then don't want to use'*.

Sarah also commented that she had problems *'trying to find the end of the roll'*, and Belinda noted that similarly to the problems with the single sheet dispenser, the roll could sometimes be *'too full and you can't get the thing started'*. Nancy called large roll dispensers *'a nightmare… they get jammed and only dispense a piece at a time'*, and Jean called them *'ridiculous, silly for everyone'*. Dr A told how *'that big toilet paper drum, I have problems with that, I can't unwind the paper, I can't really manage with just one hand'*, and Jackie commented that they were *'sometimes out of reach, difficult to get the paper out, I can't find the end'*. Pam declared she had no problems with the toilet paper dispenser except the *'big roll… I can't find the end or I get 100 yards of the stuff'*. Billy called *'big dispensers [are] a problem'*, whilst Jack declared he *'hates the big rolls'* and Sharon called them *'terrible'*.

Fred asked *'why can't the toilet paper be like we have in our homes, not those big rolls?'*. Sally who *'cant get the paper out of the big dispensers'* felt *'a normal roll of toilet paper'* would be *'the best thing'*. Jack felt the big roll dispenser *'is a barrier, why not have ordinary toilet roll?'*.

Figure 51. 'Drum' toilet roll dispenser in the accessible toilet cubicle.

The experience with the big roll dispenser was echoed in the standard toilet cubicle. 90 year old Diana described how she would be *'scratching away'* to find the end of the paper, and this was echoed by the participants at the NCTfg who also experienced *'problems finding the first bit of the toilet roll'*. Craig (B) who prefers to use the standard cubicle told how;

> *'those big rolls are difficult and you have to reach inside to see if they are stocked and they have really sharp edges. You have to put your hand in at an angle and work out which way the end of the roll is'*.

The MMfg explained how *'those big rolls are annoying, you just end up with 10 feet of toilet paper on the floor'*, and a participant from St Charles Sixth Form College stated *'I hate those big toilet rolls'*. The term 'hate' was also used by Mary who described how she also *'can't find the end and have to push your arm up'* adding *'you can't see if there's any in there or whether it's empty'*.

In both the accessible and standard provision, the poor decision of choice regarding toilet paper dispenser caused frustration for users of both cubicle types, although within accessible provision the lack of adherence to guidance

can be considered more critical for affording successful cleansing of the body after excretion. Big drum toilet roll dispensers not only impede on space as demonstrated in chapter 4, they are also unpopular with users. However the dispenser cannot be considered to completely fail to afford its given intent, as often users will be able to access the toilet paper, albeit after a level of frustration and annoyance.

7.4.3. Servicing the toilet paper dispenser

In the affordance of toilet paper for bodily hygiene, there is consideration beyond placement and dispenser design to consider availability and the servicing of the toilet paper dispenser. Here informants stress the importance that toilet paper is provided. Ahmed remarked that in the absence of water to cleanse with, *'at worst there should be plenty of toilet paper'*. Katherine commented that *'when there isn't any loo roll then obviously that's not good'*. Jean described how;

> *'one of the biggest horrors for people who need to use public toilets and they've got some sort of disability, you know you get in there and often you don't have the chance to check that there's toilet roll and you know it's really annoying when there's none… it's the basics'.*

Gavin (B) considered the supply of toilet paper to be an *'obvious'* concern and described his

> *'nightmare scenario… is to go, do a number two and not looked and realised there's no roll when you've finished, and your in a public loo and then what are you going to do?'.*

Mary felt the lack of toilet paper was *'a bit of a pain'* so carried *'handkerchief tissues'* and Janice thought having an adequate supply was important to prevent her having *'to shout "have you got any loo paper next door please", or come out and find someone'*. 81 year old Pauline stressed the importance of *'not running out of loo paper, they do sometimes. Sometimes I will look inside a cubicle and think 'oh no paper', and go onto the next one'*. Participants in

the Bangladeshi Community Focus group commented that *'toilet rolls are so important, again as Muslims if there aren't any bodnas*[5] *then there should be toilet rolls, everyone needs to clean themselves'*.

Maier et al (2009:398) note that 'systems afford behaviours via their structure for purpose'. The provision of toilet paper within the correct dispenser and placed at a reasonable position in relation to the WC pan will result in an alignment of artifact-user-affordance and successful purpose. However, such smooth affordance requires all three aspects to be coordinated, and this is not necessarily an artifact design problem but one of choice and maintenance and hence important considerations for the service design of toilet provision.

7.4.4. Affording bodily hygiene summary

To afford bodily hygiene as part of successful urination, and even more so defecation, in publicly accessible toilets, there needs to be access to toilet paper, not only in its supply but also physically through the type of dispenser chosen to provide the paper. The choice of paper dispenser and the configuration of it within the accessible cubicle will determine if the act of toileting can be fully completed to personal standards.

Tessa commented *'no dispensers seem to work very well, surely in this day and age of technology there could be a better dispenser'*, and it is interesting to note that whilst sensor devices have been incorporated in other aspects of the toilet such as bin opening, faucets, flushes, lights and paper towel dispensers, this form of technology has not been used in toilet paper dispensers. It can be suggested that such design decisions may be based on the consequences of such technology not working, and therefore the recognition of the importance of toilet paper dispensers in affording successful urination and defecation.

[5] Bodna is a Bangladeshi term for a vessel used specifically for ritual body cleansing after toileting.

Toilet paper affords the cleansing of the body after urination and/or defecation, yet the success of this important aspect of toileting is dependent on the access to toilet paper. The toilet paper dispenser model is critical for this, especially in the accessible cubicle where users may have limited body mobility and/or limited dexterity. To afford successful use of the toilet paper for many people with disabilities, there needs to be adherence to guidance that suggests the use of a single sheet dispenser. As an essential element in the affordance of excretion, this thesis suggests that a direct relationship exists between the artifact of the toilet paper dispenser (type and placement) in relation to the WC pan and can be considered a *sibling affordance*.

7.5. Conclusion

In our informants journey to the publicly accessible toilet we have encountered in the previous chapter, the barriers in reaching the facility and entering the cubicle. In this chapter we have examined how, once inside the cubicle, three key furnishings of the WC pan to capture the products of excretion, the urinal to capture the product of urination and toilet paper to afford bodily hygiene determine how successfully the affordance of this space is for it's primary function of urination and/or defecation.

The primary design of WC pan in the UK is of pedestal design, and is used by people of all ages and all abilities in both public and private (domestic) space. Yet this familiar object creates barriers for successful bodily elimination for users whose body does not conform to the adult norm. An ageing body (in early years and older) encounters difficulties using the pedestal, and we can see that the natural ageing of the body, from toilet training onwards is not catered for within the design of provision. Yet it is not the artifacts, in and of themselves, that fail to afford the functions they were designed for. Hence it is proposed that where a cubicle fails to afford successful excretion it is due to a lack of adherence to the wider system in which the artifacts function (Maier et al, 2009). This is despite many of the furnishings having design regulations to guide choice and installation (the placement and correct height of WC pan,

the requirement of a backrest, toilet paper dispenser type). It can be suggested that such guidance omits other important details such as a preferred robustness of toilet seat, and the correct placement of backrest and toilet paper dispenser.

Current guidance also fails to consider the needs of children beyond that of baby changing and young boys with the provision of urinals at a lower height, although this latter placement may also afford use by men of short stature. However, no similar provision of smaller WC pans is found in female provision for young girls, equally lower WC pans are not found in male provision for young boys to use either as a preference to more private urination or defecation. Effectively children are excluded from general toilet provision, despite an attempt by many businesses such as pubs to be 'family friendly'.

The wider adoption of Asiatic toilets within public provision would not be a general recommendation unless extensive consultation with the community finds that it is a preference. Although a biological function of the body, excretion is highly personal and thus, differing designs that could be interpreted to accentuate different cultural practices may not be suitable.

Although 'form follows function' can be considered a dictum of architectural design, the products housed within the design suggest wider considerations. Each item may provide adequate artifact-user affordance, but only do so successfully in their relationship to each other. Hence for excretion, the toilet pan is best served by being the correct placement, height and by a robust toilet seat, which in the accessible cubicle requires the correct setting of the backrest. On completion of excretion, the correct toilet paper dispenser in an accommodating position and stocked, best serves hygienic observances of the body. This suggests that a system has also to be considered in assessing the successful affordance of these interrelated artifacts to provide 'the ultimate usefulness of the affordance to users (Maier *et al*, 2009).

For some informants, the inattention to the system in which these furnishings operate (quality, security and placement), created a barrier to access the provision and use the facility in safety, comfort and dignity. The next chapter will extend the discussion on how the design of the toilet cubicle affords dignity, safety and security and comfort to the user.

8. Affording Dignity, Safety, Security and Comfort

8.1. Affording Dignity

Previous chapters have observed how informants experiences of barriers in the built environment fail to afford access to publicly accessible toilets. It has also presented how the primary function of the publicly accessible toilet cubicle fails to afford excretion (urination and defecation). In this chapter the concepts of dignity, safety and security and comfort will be explored and how current design decisions can act as a further barrier for affording these considerations when toileting outside of the home[1].

Mattson & Clark (2011:303) describe dignity as something 'that all people want', but that understanding the concept is problematic. Human dignity is described as being in an 'unhelpful disarray', where it is perceived as an *'antecedent, consequence, value, principle and experience', and viewed from 'philosophical, legal, pragmatic, psychological, behavioural and cultural perspectives'* (ibid, 2011:303). In their work with 72 older people[2] Woolhead *et al* (2004) describe dignity as a 'complex' and 'multi-faceted concept'. Their research identified three key areas in which the concept of dignity was important, these were;

- Dignity of identity (self respect, integrity, trust)
- Human rights (equality, choice)
- Autonomy (independence, control)

Woolhead *et al* found it was the loss of dignity that was discussed more often then examples of when dignity is enhanced. This suggests that maintaining a

[1] As with chapter 4, this section is based on informants' experiences of the then current design and layout of toilet provision as set out in the British Standard BS8300 (2001). Subsequent revisions of this guidance (BS8300; 2009) included wall placement dimensions of the products discussed here, although does not allow for product size. This has not been revised in the thesis, as the experiences of informants are based on the earlier guidelines.
[2] There is very little published on dignity and people with disabilities in the generic, instead, dignity has mostly been examined from the perspective of specific disabilities, such as learning disabilities and brain injury, as this thesis is not specifically focused on dignity from these perspectives, the literature has not been reviewed.

level of dignity is considered to be an expected standard and when such standards are not met, a loss of dignity may ensue. Mattson & Clarke (2011:303) suggest that dignity should be viewed as a state 'of individual wellbeing that is shaped by relationships with others, affected by the physical world and framed in terms of values'.

8.1.1. Affording dignity for toileting.

Considering dignity when toileting outside of the home, was determined by the environment's fixtures and fittings which support the act of excretion, but did not afford excretion itself. Hence to afford dignity in publicly accessible toilets there needs to be partitions between the toilet cubicles (and, as briefly mentioned in the previous chapter, between urinals). There is also the requirement for the opportunity to flush the toilet so that the cubicle is left in an acceptable condition for the next user. Access to hand washing furnishings such as a basins, taps, soap and hand drying is required for ensuring personal hygiene regimes are adhered to as well as to prevent cross contamination to other users. There also needs to be bins to dispose of items that cannot be flushed such as sanitary waste and/or colostomy/ urostomy bags, and nappies.

Considering design that affords dignity, generated 371 comments from informants' on their experiences and followed four narratives of; the dignity of visual and sensory barriers, disposing the products of excretion, self hygiene and disposing sanitary items

8.1.2. Affording dignity through visual and sensory barriers

There are no standard recommendations with regards to the height or acoustic density of toilet partitions. The only standard that designs are required to meet is that they frame the space of the standard cubicle, and where used for an accessible cubicle (although this is rarely found), that both cubicles are set to the correct dimensions (as discussed in chapter 4). For users, there is the need for the visual privacy partitions provide to be

extended to audible and olfactory privacy when using the toilet cubicle. To transgress these elements of privacy equates to a loss of dignity.

Alice (C) summarised this issue as;

> *'partitions are a big issue, they don't provide dignity when using the loo. I would prefer a fully enclosed cubicle with good ventilation… an enclosed space so that you don't feel like your sat right next to the person on the other side.'*

Alice further described current partitions as a mere *'visual screen opposed to a screen from all the other senses that come with going to the loo'*.

Susan and Rosa, in their early twenties, commented on the quality of partitions;

> *'you know those really cheap toilets with the gap on the ground and they're basically like cardboard – you can hear everything, it's not private at all. It's better when it's all sealed'*.

Also in her early twenties and Jenny (C) said *'I don't like partitions where people are still aware of you being there, it's quite off putting'*. Alexandria (B) also *'much prefer to have a closed space, I don't like it when there is a gap at your feet or when the walls are quite low'*. Danielle (C) *'hates the gap under or over the door… I dislike the idea that people can hear me and I can hear others, I just cannot relax'*.

Mothers from both the National Childbirth Trust (NCTfg) and Manchester Mums focus groups (MMfg) commented on the problems of cubicle heights from the floor being too high. One mother, sensitive to the dignity of others, described how her son is;

> *'fascinated by gaps underneath the door, he tries to crawl underneath especially when I'm on the loo. Or he peers under the gap and upsets*

the person next door. It's an issue at crawling age, I can't put him on the floor, he'll just head for the gap, so I have to go with him on my lap'.

Yet when partitions are poorly designed, they can result in a loss of dignity with respects to independence and control, and possibly incur injury. 90-year-old Diana described how a partition collapsed on her whilst using the toilet in a supermarket;

> *'There were three in a line and I went into the one next to the wall. I put up my stick and as I put up my hands the whole thing came in on me. I grabbed hold of it but it was still joined at one point to the door. So I pulled round trying to keep the door upright and not coming in on me and I wrenched my back*'.

8.1.3. Affording dignity through visual and sensory barriers summary
Partitions are required for privacy when using the toilet cubicle, creating a private space for the personal act of toileting within publicly accessible provision. Whilst current partition design may provide a basic visual barrier between users, they often do not provide a shield between the noises and odours the body can sometimes make when excreting. Such leakage of sound and smell can be embarrassing for users and lead to a sense that dignity is lost due to the activity in the cubicle being revealed. In addition, the design of partitions may not be robust enough to withstand high use by members of the public, becoming unsafe and possibly a danger to users.

8.1.4. Affording dignity by disposing of the products of excretion
After completing toileting it is considered customary and good manners to dispose of the products of excretion by flushing the toilet after use, especially in publicly accessible provision.

In the accessible toilet cubicle the flush handle is recommended to be of the 'paddle' or 'spatula' design and placed on the transfer side of the cistern

(figure 52)[3]. In their audit study, Hanson *et el* (2007) found that 42% of the accessible toilets had the toilet flush located in the wrong place and/or were not fitted with the correct flush handle (figure 53). The installation of the wrong type of flush handle situated on the wrong side of the cistern can make it impossible for some users of the accessible toilet cubicle to flush the toilet after use. The paddle type flush has been designed to aid people who may have limited dexterity, and should be able to be operated by the elbow[4]. It is therefore important that the flush handle is placed at shoulder height of a seated user, as higher flush handles may be unreachable and unusable (ibid, 2007).

Comments concerning flushing the toilet focused on narratives of the flush handles affordance through placing, height and type; Abigail, who uses a wheelchair, described her experiences of trying to flush the toilet;

> *'So often you find the toilet flush on the wrong side and you can't reach to flush it… it really does annoy me because you don't want to leave the toilet without it being flushed because there's nothing more off-putting then coming into a loo that hasn't been flushed. I'm always aware of this and have flushed the loo when I'm sitting on it and you don't want to do that either. But I thought I'm not going to leave it unflushed for someone else'.*

[3] There are no recommendations for flush handle type in the standard cubicle. This often leads to an array of different handles some of which can not be used by people who do not consider themselves disabled and therefore continue to use standard provision, such as older people with arthritis and children.

[4] Access auditors often test the accessibility of the toilet cubicle by seeing if the elbow can operate all fixtures and fittings.

Figure 52. correct ‘spatula’ flush handle on the correct ‘transfer’ side of the cubicle

Figure 53. Incorrect flush handle placed on incorrect side of the cistern

Informants recalled their experiences of finding the flush handle on the ‘wrong side’ within the accessible cubicle (i.e. not on the transfer side of the cistern). Dr A explained how her *‘right shoulder is bad so I have trouble reaching the flush if it’s not on the transfer side’*. Betty (C) described how if the *‘flush is on the wrong side I can’t stretch over the toilet as I can lose my balance and fall’* and Pam (C) told how she, *‘often finds flushes on the wrong side… I struggle to reach it. I once mentioned this to Sainsbury’s but they didn’t understand what I was talking about’*.

Informants also spoke on how the height that the flush handles could also be problematic. Miles identified this as *‘the biggest problem… I can’t reach… it’s*

too high'. Pat found that the incorrect height of the flush handle meant she had to *'stretch to reach it'*, and Jackie found *'the flush isn't reachable…it's too high. I have to ask carers to flush'*. Eileen commented that she *'often finds the flush out of reach… too high up and I can't reach'*. Juliet found that when she was *'flushing the loo you have to stretch your arm across, it's out of reach'*, and added;

> *'when they first plan these loos I don't know how they start or what they're thinking of but the height for pushing a button or pulling the flush or whatever, it varies so much'*.

Informants commented on problems with flushing the toilet due to the choice of mechanism to operate the flush. Juliet found, *'you need to be able to easily flush the loo and that can vary what the mechanism is, it varies in different toilets'*. Informants noted where guidelines to the design of the accessible cubicle had not been followed and an inappropriate flush mechanism had been installed, in particular push-button flushes (figure 54). Fred (C) stated *'I like a paddle flush, not one of those buttons in the wall'*. Richard (C) found;

> *'push buttons don't work, I can't use… I need a flush that responds to gentle tough, I have to throw my arm to grab a handle, so I need one to just touch… paddle handle would be great'*.

Alice (C) has *'great difficulty using recessed button flushes… requires too much pressure'*. This was also commented on by Belinda and Sharon (C), who found they *'can't get enough pressure to get it [the button flush] going'* and *'can't use any with those button flushes'*. Jenny, (C), Tara (B), Maria (C) all described these form of flushes as *'difficult'* and *'a problem'*. Sarah (C) called the push button flush *'the bain of my life!'* and Craig (B) described these flushes as *'not easy to find'*. Carla (C) stressed, '*I can't use those button flushes that they put on top of the cistern, I don't have the strength and it makes you feel really dirty when you can't flush'*. A participant from St Charles 6th form College focus group (StCSFCfg) stated that she *'can't use the wall push button flushes with my [false] nails'*. However, 90 year old Diana had

found a way to overcome the problematic operating of the push button flush, *'they're very stiff but I can work it very well with my walking stick. I put it on there and lean on it and the thing flushes very well'.*

Figure 54. Push button flush in the accessible cubicle.

Other forms of flush mechanisms, such as sensor flushes were also commented on. Alexandria (B) liked *'the toilets that you flush by waving at the button'*, and a preference for sensor flushes, *'as it's something you barely touch'*, was expressed by the young men from StCSFCfg. Sensor flushes were also the preference of participants from the NCTfg, as one mother explained;

> *'children always want to flush the loo, they have to squeeze past the sanitary bin and then it's too hard for them. It's good to have a space by the toilet so that they can flush it but it has to be a handle they can use. The push button is too difficult but waving your hand across is ideal because you don't have to touch anything'*.

However, sensor flushes were not popular with everyone. The MMfg found them *'really annoying, you just end up waving at everything'*, and Alice found them;

> *'problematic, I set them off with my backpack and sometimes it continuously flushes. It makes me feel uncomfortable and rushed. I really feel the need to control toilet flushing'*.

Although there have been a number of environmental sustainability initiatives to save water through less flushing, especially after urination and encompassed in the saying 'if it's yellow it's mellow, if it's brown flush it down', these behaviours have tended to be practiced in the privacy of the home and have not become common practice within publicly used provision.

Other sustainable solutions include flushing mechanisms, some of which were described as 'difficult' to operate by informants. These included the dual flush option of a long/short flush. These flush mechanisms have been designed from a sustainable perspective to minimise water use with a long flush used for defecation and the shorter flush used for urination. Dan found he didn't know *'which one is which so you do a short flush and it doesn't get rid of everything so you end up flushing lots of times'*. The efficiency of the flush was also mentioned by Alexandria who found *'if there are 10 people ahead of you in the queue you know it won't flush by the time you get to use it'*, and Vicki who found it *'bizarre that when people flush and it doesn't flush they don't do more to sort it out, it really is an important thing'*. Vicki also stressed the importance of the flush *'I think the flush is really important because your waiting and the poor lady that's gone in front of you is too embarrassed to come out because she has not been able to flush the loo properly'*.

8.1.5. Affording dignity by disposing of the products of excretion summary
Informants' narratives of their experience of flushing the toilet in the accessible cubicle focused on the difficulties they experience completing this action due to the placement (position and height) and choice of mechanism to operate the flush. Those who used the standard cubicle also found the flush difficult to reach and operate. Whilst the flush can be considered a nested affordance (Gaver,1991) that requires the configuration of position and functionality, it also is crucial to afford dignity in toileting by successfully disposing of the body's waste.

8.1.6. Affording the dignity of self hygiene; hand washing

It is widely recognised that washing hands after toileting not only removes any excreta residue, and is important for the control of infection both to the user and other potential users. Jumaa (2005) has described how 'hand hygiene behaviour' requires a complex interdependence of factors' (ibid, 2005;3) that invoke behaviour and wider social norms that may be culturally contingent. 'Interventions', such as access to water, soap and hand drying may increase compliance with hand washing practices (ibid, 2005).

The evidence for hand washing frequency has mostly been based in medical literature of studies within the healthcare sector. Hand washing is crucial to remove human excreta after toileting, especially fecal matter that is the main source of transmission for diarrhoeal illness. Jamaa (2005) found that a global study of hand washing carried out by the World Health Organisation in 2000 suggested that hands are washed with soap less then 20% of the time. In a UK study on hand washing in train station lavatories, Hateley and Jamaa (1999) found that only 34% of men and 56% of women washed their hands after leaving the lavatory. The researchers concede that it is notoriously difficult to accurately assess hand-washing levels, especially in observational studies due to reactive bias through to the presence of the observer. However, whilst considering access to hand washing facilities, the research cited above considers this in terms of provision, not the ability to physically use the hand-wash provision itself.

In affording dignity in toileting, being unable to wash your hands not only contravenes culturally held notions of hygiene and cleanliness it also reflects personal habits. In the accessible cubicle hand-washing provision is provided in the private area of the cubicle itself. In the majority of standard lavatory provision, hand-washing is provided in full view of other users –giving a sense of panopticism, of being observed to observe practice within the space. Such observance was commented on by Belinda, who recalled that;

'I thought hand washing in cubicles was a good idea, but I used it once and then walked by other hand washing facilities and became worried that others would think I hadn't washed my hands'.

Informants made 224 comments on their experiences of washing their hands after using the lavatory. The narratives focused around the affordance of 'interventions' (Jumma, 2005) including the basin, soap, taps and drying provision.

Alice (C) spoke about the need to have good hand washing provision;

'It's so important to have good hand washing facilities. With IBS your more prone to picking up bugs, as your bowels don't have healthy gut flora. I'm not as resistant to bugs especially ones that might be associated with toilet use. So washing hands in public facilities is very very important'.

Sarah who uses crutches for her mobility, expressed difficulty accessing hand washing;

'I need somewhere to rest my crutches close to the sink, sometimes someone will help by holding my crutch but if I'm on my own I look at the sink and the sink looks at me'.

Some informants had given up on using hand washing provision altogether and relied on bio-hand gel, Maria found it *'does away with trying to use the sink, taps, soap dispenser, hand dryer etc'*. Maria's observation of the multitude of equipment needed to wash hands highlights the complexity of the action, and the requirement that all interventions are of themselves accessible. If one component in the configuration fails, for many people, the complete action fails.

Informants who were parents commented on the problems they experienced hand washing themselves and the child. Mothers from the NCTfg worried that

their sons, who reached the age of toileting on their own, has been *'habitualised to not wash his hands'*, due to the fact that they could not reach the facilities. Other mothers commented on their daughter's need to *'hold onto the toilet seat to support'* themselves, but being unable to reach the facilities to adequately wash their hands afterwards. One mother told of still having to lift up her seven year old to reach hand washing provision, and the dilemma she went through in this process;

> *'do I wash my own hands first then dry them, then pick up the child and wash their hands, and they always want soap, so you have to hold them up to the soap which is always higher. I have a bad back now because of all of the lifting. So, do I wash my hands before all that or do all that and then wash my hands'*.

8.1.6.1. Affording the dignity of self hygiene; the basin

In the accessible cubicle, informants commented on their experiences regarding the size of the basin. Jackie found that the small size of the basin sometimes caused *'splashing on my clothes'*, and Jack also found the basin caused water to *'splash back'*. Katherine found that the small basin *'causes a wet floor'*, which can cause her *'difficulty transferring'* from her wheelchair to the WC pan. This was also a concern for Margo who commented *'the sink [basin] is too small… end up covered in water and then water all over the floor which is dangerous when I'm using crutches'.* The size of the basin also resulted in Miles, Jackie, Eileen and Jack having to use it *'at an angle'*, which contributed to water being splashed on the floor.

As chapter 4 observed, the recommend layout from the edge of the WC pan to the basin is 140-160 mm. This has been set to assist users to wash their hands without having to transfer back to wheelchairs. In the audit of toilets Hanson *et al* (2007) found that 84% of accessible cubicles had not followed the correct measurements in setting the basin in relation to the WC pan.

Despite comments about the size of the basin being too small, Eileen and Jack also reported finding the basin *'too small and in the way'*. Whilst the configuration of the basin to the WC pan has been determined by the need of users to wash their hands whilst still seated on the WC pan, only Sarah mentioned that one time she was able to do this. Sarah thought *'it was brilliant, but generally I don't wash my hands when on the loo as the basin is too far away'*.

Instead informants' experiences recalled that they did not wash their hand whilst on the WC pan but always transferred back to their wheelchairs before washing their hands. Glenda told how she *'wouldn't wash my hands whilst on the loo as I touch the loo to get off'*. Jean thought it would be nice to wash her hands *'before and after getting off the loo, but the basin isn't near enough. I carry wipes because of this'*. Fred also found the basin *'too far way to use'* whilst still seated on the WC pan and Jean who thought it could do with *'being closer'*. However, Richard found the basin to be *'too close, especially if the toilet is small'* as did Margo who found the basin *'too close to the toilet. It's a barrier when transferring back to the wheelchair'*. Philip also had concerns regarding the WC pan basin configuration if he experienced a spasm when using the WC pan, he explained how he *'might tip forward and bang my head on the basin'*. Jessica felt *'the basin would be better for me if it's further away from the loo'* and Katherine found;

> *'there's not enough room when the basin's right next to the loo, transferring is really hard, the basin obscures space where you need to transfer it gets in the way of the loo'*.

For Adrian, Marsha and Leah and participants of the NAfg, the proximity of the sink to the WC pan also provided additional support when transferring on and off the WC pan, especially if the configuration of grab rails was incorrect (discussed in chapter 6). Their concerns with the sink therefore became focused on how securely it was attached to the wall. Sally, Helen and Leah explained how they did not use the basin from the WC pan but also do not

transfer back to their wheelchairs, preferring to stand to wash their hands, and also use the basin for support.

8.1.6.2. Affording the dignity of self hygiene; the basin summary

The size and placement of the basin provides a complex configuration that, for many users both able and disabled, does not support successful washing of hands after excretion. Respondents' experiences reveal how those who use wheelchairs, do not conform to the design specification of using the basin whilst seated on the WC pan. Although this can be attributed to Hanson *et al's* (2007) findings that the majority of accessible cubicles have not followed the correct dimensions for this layout, it can also be suggested that there might be a lack of understanding concerning how people prefer to use the facilities. Respondents who use standard provision will dress themselves before leaving the cubicle to enter the hand washing area. Hence, a certain amount of contamination can be considered acceptable[5]. Similarly, people with disabilities, especially those who use wheelchairs also prefer to dress themselves before transferring back to the wheelchair and washing their hands. The proximity of the basin to the WC pan is set to aid users to wash their hands after self-evacuation of their bowels. However, informants who needed to self evacuate reported only doing so at home and never in publicly accessible facilities[6].

8.1.6.3. Affording the dignity of self hygiene; soap

As Jamaa (2005) noted above, the majority of studies in hand washing have focused on those who work in hospitals. This pattern is repeated in studies of use of soap in hand washing with additional literature addressing the need to encourage soap use in hand washing in countries in the midst of 'development' (Curtis & Caincross, 2003; Luby et al, 2004;2009;). However,

[5] Some users of standard cubicle have mentioned using toilet paper to open the door locks of the cubicle but this tends to be in protection of the self from others 'germs' opposed to prevention of ones own contamination to others.

[6] Informants explained that self evacuation was a set bowel regime that if performed away from home would be if they were on holiday or on an overnight stay and would be undertaken in the private / public provision of a hotel room, not in a general publicly accessible toilet.

the use of soap in hand washing has not been comprehensively explored amongst members of the public, especially in consideration of access to soap dispensers[7].

Jack stated that he '*prefers dispensers as they are cleaner then a bar of soap'*. Vicki felt *'being to wash your hands properly with soap'* was an important element of using the lavatory. Alexandria stated that *'soap is really important. I have to wash my hands. I will not go to the toilet if there is no soap or I can't use the dispenser'*.

Informants' experiences of access soap to wash their hands focused on narratives of the soap dispenser's affordance including positioning, type and provision. Fred found *'soap dispensers tend to be in a bad position'*. Adrian felt the *'soap dispenser too far away from the sink or the depth of the sink blocks my reach'*. Sarah found their *'position make them difficult to use… it's awkward with crutches'*. Tara described how she often *'can't reach soap… if your going to standardize everything keep it at the right height'*, and Joseph as carer of his wife found *'she can't reach the soap dispenser when it's halfway up the wall'*. Billy described the soap dispenser as *'difficult.. awkward… as long as it's close to the basin it's ok, but if it's too far out I have to reposition my chair so that I can get to the soap and the basin*'. Mothers from the NCTfg also commented that soap dispensers were *'difficult to reach for us and children'*.

Although informants commented on the placement of the soap dispenser, their primary experience concerned the actual use of the dispenser. Fred found *'… the action, I can't work it out*'. Having to *'work out how they work '* was echoed by Nancy, Marsha and Lisa, Jean and Mary. Dan found soap

[7] Soap dispensers are the predominant means of soap use in publicly accessible toilets, replacing bars of soap. This is often due to the belief that soap bars can 'look filthy' (National Childbirth Trust focus group) and transfer bacteria. However Bannan & Judge, 1965; Heinze & Yackovich, 1988 found that such transference was unlikely. The removal of bars of soap from publicly accessible provision may therefore be based on instances of theft.

dispensers *'confusing'* and Miles commented that *'you get confused as to how to operate one or the other'*.

For those who experienced difficulty with using soap when washing their hands, the key criteria was being able to use the soap dispenser with one hand. Helen and Maria found that they *'need something that can be used with one hand'* and Sarah was adamant that the dispenser *'has to be one handed'*. Allan found that he would often have to *'use both hands to use the dispenser, but I can't as I need one hand to support myself'*, and Sarah elaborated further *'if holding on with one crutch getting to the soap dispenser gets awkward, so I avoid soap dispensers'*.

The model of soap dispenser that informants experienced as causing the most problems were those that required a push button to operate. This was particularly problematic for informants with arthritis (Carla, Sharon, Margo, NAfg) who stated they *'can't push buttons'* and found push button dispensers *'unusable'* and *'difficult'*.

To counter the difficulty experienced with push button dispensers, Richard, Jessica and Jackie expressed a preference with lever operated dispensers. Participants from the NAfg felt it *'would be better if there were sensor soap dispensers'*. However Katherine felt *'sensored operated soap might be problematic as you might set it off and get soap everywhere'.*

The provision of soap was commented on by informants as being problematic. Pat found *'soap dispensers tend to be badly managed so I don't use'*, and Belinda found them *'often empty'*. A *'lack of management'* and *'no soap'* was also cited by StCSFCfg as a specific problem in hand washing provision, and Ian commented that *'being without soap is a fairly common occurrence'*. Pam and Glenda found soap dispensers *'all gunged up'* and *'not working well'*. In contrast, some lavatories were singled out for their good soap provision Vicki

recalled a shopping centre facility that *'has soap and even hand cream. That's my luxury loo'*.

8.1.6.4. Affording the dignity of self hygiene; soap summary

It is widely recognised that within care settings, access to hand cleaning products (soap, anti-bacteria gel etc.) is essential for good hygiene. However, there is no research that can commend such requirements for publicly accessible lavatories.

As detailed above, the placement of the soap dispenser, the choice of dispenser type, and the management of the dispenser, ensuring it is filled and cleaned, can make the experience of accessing soap for hand washing difficult for many users. Although this lack of hygiene observance was not directly commented on by informants, together with difficulties accessing the basin, we can see that the configuration of these items does not support reliable hand washing provision, and therefore does not afford dignity in self hygiene practices after toileting.

8.1.6.5. Affording the dignity of self hygiene; taps

Access to water is essential for hand washing, yet informants commented on how difficult this could sometimes be because of the varied operating mechanisms of taps. 74 year old Mary described how;

> *'some of them you are suppose to put your hands under the tap and the water comes on automatically, some of them you are suppose to push the top down, some of them you are supposed to turn round and some of them don't work'*.

Informants' experiences of taps were led by experiential narratives of specific designs such as lever taps, push taps and sensor taps. Audrey who manages IBS described how;

> *'The other thing is about cleaning. I know you have to economise with water and I'm all for economising on natural resources, water being*

extremely important of course, but I do think that when your in a state like me, I mean I get a little phobic about germs so I really want to wash my hands well and when you have the sort of tap that you press and a dribble comes out and then stops running a couple of seconds later I have to keep pressing them in order to get enough of a flow from the water to really feel I can get a nice hand wash'.

In the accessible toilet cubicle, the recommended tap fixture is the lever tap. This affords users to access the tap with a minimum of hand dexterity and strength. Hanson *et al* (2007) found that the lever tap was the most common design feature of the accessible cubicle. Their audits found lever taps installed in 99% of provision, although in some facilities the tap was installed on the wrong side of the basin[8].

With the majority of accessible cubicles conforming to the design specifications, a separate issue regarding lever taps arose. This centered on controlling the temperature of the water. The MMfg and the NCTfg found that mixer lever taps were preferable but that *'the water was either freezing or boiling'*, adding; *'you can't work out hot and cold, there are no clear directions so you either get too hot or cold. Getting the temperature right is difficult'.* Identifying hot and cold water direction was also commented on by Miles, Dan and Pam who found that sometimes *'there's no hot water anyway'* and that *'most taps use cold water'*. The lack of temperature control for washing hands caused discomfort for Maria who stated that *'cold water affects my polio'*, Margo (C) commented that *'cold water hurts my hands'* and Jessica told how *'water temperature is important because I have poor circulation so the water needs to be warm'*. Alice found;

'most water in loos is cold. This is important, as without good washing facilities I don't feel I have adequately washed my hands. I need warm water but also because warm water dries quicker on your hands so it

[8] Ideally the tap should be on the side of the basin closest to the WC pan to enable use whilst seated on the WC pan.

makes drying hands with a hand dryer more successful. Cold water sticks to your hands so under the dryer it doesn't evaporate'.

The temperature of water became particularly problematic in winter. Sarah told how she;

'suffers from Reynards, I'm very sensitive to the cold, my fingers go numb then as they warm up they become incredibly painful, so in winter it's really important I have a decent temperature of water'.

Belinda, Sharon and Pat, also commented the importance of having warm water, *'especially in winter'*. Billy mentioned that he often '*doesn't wash hands in winter'* due to the unreliability of water temperature.

Push taps were mostly found in the standard toilet accommodation, which as previously discussed is also used by people who either do not regard themselves as disabled or for whom their disability does not require the space of the accessible cubicle, but who still require accessible affordance in provision. Sarah who uses crutches commented, *'I have difficulty using sinks especially those with push button taps, especially when you let go and the water flow stops'*. Mothers from the NCTfg commented how push down taps were *'difficult to hold that down and hold a child'*, push down taps were also problematic if used in nappy changing as *'you contaminate the tap'*. A mother of twins from the MMfg told how she;

'hates using press taps – you have one knee up for them to sit on and your trying to get the water to work and them to wash their hands – you do feel like giving up but it is important'.

Sensor taps are becoming more common, especially in standard lavatory accommodation. Participants in the Nottingham Arthritis focus group (NAfg) found that sometimes *'there's a bit of a delay with the sensor and you wonder if it's working'*. They also expressed a concern that *'older people won't know how they work',* and this concern was echoed by Samantha, a carer, who felt

that sensor taps could be considered part of the *'high tech stuff that older people can't understand'*, adding;

> *'you get in the bathroom and you try to use the sensor thing and it doesn't work and you end up coming out without washing your hands and you kind of say 'ok technology is there to help me but it's not working'. You just think maybe there should be good old-fashioned taps'.*

Craig (B) prefers using standard toilet provision finds *'sensor taps confusing'*. Katherine told how *'sensor taps go off if you put your bag in the sink when there's no hook or shelf'*.

8.1.6.6. Affording the dignity of self hygiene; taps summary.

The majority of accessible toilet cubicles were found by Hanson *et al* (2007) to have included the recommended lever tap fixture. Yet informants still experienced difficulties with accessing taps due to identifying the correct water temperature and/or the provision of warm and hot water. Whilst lever taps can be considered to afford hand washing, controlling the water temperature made this difficult.

In standard provision, there was a variety of tap fixtures that informants experienced as problematic and considered unreliable for a range of users, especially those with mobility concerns who also used standard provision. These also included users caring for young children, older people and those not familiar with new technologies. Access to water is essential for hand washing and informants felt this was important in the process of toileting with dignity.

8.1.6.7. Affording the dignity of self hygiene; hand drying.

After washing the hands, sometimes with soap but always with water, there is the requirement to dry the hands. As with previous literature in this area, studies into the effectiveness of hand drying for infection control have been

based in the healthcare sector (Gould, 1994; Boyce & Pittet, 2005). Ansari *et al* (1991 cited in Yamamoto *et al*, 2005) found that infection control was determined by the right selection of hand drying apparatus, especially where less affective hand washing means are available (for example; the correct temperature of water and soap). A study by Yamamoto et al (2005) focused on hand drying as the last step in hand washing, especially where non-antimicrobial soap was used[9] and compared hand drying between paper towels and air dryers[10]. Their study found that it was not the instrument *for* drying that prevented bacterial increase but the method *of* drying. For example, rubbing hands under the air dryer increased the bacterial spread. In contrast paper towels were found to remove bacteria from fingertips but not from the palms and fingers. Yamamoto *et al*'s study concluded that air drying with ultraviolet light and holding the hands stationary was the most hygienic form of hand drying where non-antimicrobial soap would be used, but that paper towels were more effective at removing bacteria from fingertips.

As discussed in chapter 4, BS8300, recommends both the inclusion of paper towels *and* automatic hand dryers within the accessible unisex cubicle. Hanson *et al* (2007) found that 57% of cubicles contained automatic air dryers and 12% of facilities included paper towels. Their audits do not detail if this followed BS8300 guidance for both to be included within provision or if these numbers reflect a 'one or other' provision. They do suggest that 31% of cubicles offered no hand drying provision or provision that was not recommended in the guidance (hand towels, roller towels), as Dr A commented *'hand drying facilities leave lot to be desired as well'*.

Informants' experiences of drying methods focused primarily on the preference of either paper towels and/or air dryers. Some informants did not

[9] As commonly used in the healthcare sector.
[10] Other studies in this area had, overall, inconclusive results, Davis et al (1969) and Gustafson et al (2000) both reported no significant cleanliness difference between hand dryers and paper towels as well as roller towels. Blackmore (1989) found air dryers' increased bacterial presence on hands, whilst Ansari (1991) found air dryers decreased bacteria on hands.

express a preference in either method but were instead concerned with where drying technologies might be placed within the cubicle.

Marsha (C) expressed a preference for paper towels as *'warm air just doesn't dry and you have to move your hands up and down which can be quite painful'*, adding, *'the automatic hand dryer seems to come on if I just look at it'*. The sensitivity of the dryer also discouraged Pat from using it *'I don't like using auto-dryers, in one loo it was set too close to the bowl and it kept going off'*, and Juliet added;

> *'I just hate that hot air that blows all over you and it makes the atmosphere smelly because those same toilets are used as the baby nappy changing area and it's not a happy smell when it's warmed up air in those toilets'.*

Belinda, expressed a preference for paper towels as *'I feel there might be an issue with germs and warm air'* but she conceded that *'it [warm air] does help my joints and make my hands feel better'*. Samantha who cares for people with learning disabilities described clients' preference for paper towels;

> *'dryers… it's a funny thing, my clients don't know about dryers. When they see a dryer they put their hands under it go to the toilet and then put their hands under the dryer again. They get really confused. But if you put good old paper towels in they know to wash their hands and dry them, but the dyer thing – it's very confusing'.*

For Larry (C) access to paper towels is essential. He described his experience of toilets not providing paper towels;

> *'when you go to the toilet there's no paper towels, there's not even a dispenser for paper towels. All there is is a dryer and it's not acceptable. A dryer is no good. You can't cleanse yourself with a dryer… to turn around and dry yourself on the stomach or wherever. The paper towel is absolutely essential… it's absolutely ideal'.*

However concerns were raised considering the management of paper towel provision. Informants often found them *'out of stock'* (Tara, Ahmed) or *'jammed in'* and *'stuffed too tight'* (MMfg, Jenny). The result of such tight stocking of the dispenser is that many users, especially with poor dexterity or weak arms, *'can't pull them out'* (NAfg) or *'when you pull them 10 come out'* (MMfg).

Considering a preference for air dryers over paper towels, Billy found it *'easiest'* as his hands *'do get cold, dryers warm them up'*. Alice commented, *'I prefer warm air but find so many of them inadequate … they just breathe on you'*. However, she added;

> *'I also like them as they prevent other people from hearing you when in the loo. I'll sometimes wait until the hand dryer goes off to 'go' as the noise will shield me from the noises I make'*.

Miles preferred *'warm air'* but *'heard they give off more germs'* and Katherine liked air dryers *'as long as they have a big button. I prefer them to paper towels as I just end up pulling them all over the floor'*.

Some informants expressed how much they disliked air dryers. Glady's found the noise of air dyers to be *'unpleasant'*, and Joseph, a carer, found dryer noise *'provokes a reaction in Belinda, it startles her'*. Mothers from the NCTfg found that dryers *'scare children'* and that *'children don't like the noise they find them very scary and sometimes they go off by accident and children burst into tears, they are terrified of them'*. This was echoed by the MMfg who commented *'hand dryers really freak them out – really scare them. They call it the monster machine, all that noise and air'*. Other informants disliked air dryers because of their ineffectiveness Jackie commented that *'I get fed up trying to dry my hands with warm air, it takes too long and I end up wiping my hands on my trousers'*. The time factor was also commented on by Vicki who said;

'I really hate the blowy handy things… I do find them useless. And of course most people are not inclined to wait the two or three minutes it takes to dry them and go and get a bit of paper'.

Diana also found *'people haven't got the patience to wait for the warm air to come out'*. Juliet stated *'dryers, I hate them, I would actually rather use toilet paper then use a dryer'*.

Informants also expressed a preference to the correct hand drying combination of air dryers and paper towels, as recommended in the BS8300. Dan described how he preferred dryers and paper towels as *'if I've had an accident I can use the warm air to dry my clothes'*. Pam told how she *'dries hand initially with paper towels and then finishes them off in the dryer'*. The time factor was again mentioned in relation to using air dryers. Pamir found *'hand dryers are good but they take ages to dry your hands, and you drip them on the floor and make the floor dirty. I use paper towels and dryers as well'*. Ivan told how having both paper towels and dryers is;

'really handy, because it takes much less time to do that if you just use one towel and dab the excess water off with that and then stick them in the dryer and you are out very quickly'

Whilst the BS8300 recommends the inclusion of paper towels and air dryers, it does not give explicit measurements as to where they should be placed, merely that they should be placed between the basin and the cubicle door (as overviewed in chapter 4). Informants commented on the difficulty they experienced using hand drying equipment within the accessible cubicle. Betty who uses a wheelchair and walking sticks described how;

'*Sometimes the hand dryer is on the other side of the room. I have to wash and dry my hands from the toilet, if I can't dry, my hands will be slippery and the transfer back could be dangerous. If I'm using sticks it's important to dry my hands or I will lose grip with the sticks.'*

Katherine found that;

> *'dryers are sometimes not close to the sink. I can't maneuver my wheelchair with wet hands, and then the floor is wet and dirty – no point washing my hands really. The dryer does need to be closer to the sink'*.

For Sally there were problems with hand dryers as;

> *'I can only dry hands one at a time, I need to hold on for balance. Can't hold both hands up and rub them. I also can't maneuver the chair to use them sidewards'*.

Marsha commented;

> *'its important to wash and dry your hands but in most loos it's not well done. You wash your hands then have to find the dryer and sometimes it feels there are dryers everywhere except where you'd like them and Lisas [Marsha's carer] always setting them off'*.

Billy summarised the situation he experienced as;

> *'there's a problem when drying facilities aren't adjacent. Having just washed your hands and having to wheel across the room to dry them – rather pointless'.*

In standard toilet provision, informants commented on their experience of specific air dryer design as their preference[11]. Sylvie described how;

> *'the whole business of drying hands can be problematic – air dryers are horrible when they don't work properly – just make the whole airless place stuffier… the Dyson dryers are best although there's often only one installed for several stalls which is not enough'.*

[11] As described in chapter 4 BS8300 (2006) is explicit in its recommendation that 'hand dryers that require the user to insert their hands in the top of the dryer should not be installed' (BS8300, 2006:149).

Laura stated;

> *'I love those Dyson super blaster things that you shove your hands in. I love then I think their great. My daughter is terrified of them so they're not a great option in kids areas, although they have them in the Imperial War Museum and the kids there love them. I guess their school age children and they queue up to dry their hands, they think they're great'*.

In contrast to Lillian's observation, this researcher presented at the Imperial War Museum and observed a mother attempting to coax her extremely agitated child to use the *Dyson Air Blade*, giving up when the child became quite adamant that they did not want to use it.

Samantha called the *Dyson* dryers *'quick, clean and fun'* and 90-year-old Diana had observed that *'small boys love them'* but observed that *'they make everybody jump'*.
However Vicki countered;

> *'there needs to be an education programme on dryers. The new Dyson hand dryers are really good because they stop people using up the toilet paper. Because people don't like drying their hands with those air things they take the toilet paper out of the toilet so there's none for its proper purpose and there's all this ghastly litter everywhere… it's [toilet paper] not designed for that, I mean it melts in your hands, it dissolves in water, it's not a good experience for drying your hands'*.

8.1.6.8. Affording the dignity of self hygiene; hand washing summary
Hand washing is a dexterous action that requires the correct presence and configuration of supporting products, including the basin, soap dispenser, lever taps and two forms of drying apparatus (paper towels and air dryers). The inclusion of these 'interventions' (Jumaa, 2005), set at where recommended, the correct dimensions will afford dignity in the completion of hand washing to many users of the accessible cubicle, whose abilities and

supporting needs will cover a wide spectrum. Yet Hanson *et al* (2007) found the inclusion of the correct configuration of these items in less then 2% of facilities. Lever taps and soap dispensers appear as mere support in this product line up, yet to not consider if these items are accessible, that they are operable by someone with one hand *or* lack of arm strength, denies the user completion of the hand washing observance, one that is both for public health benefit as well as personal well being. Similarly, the inclusion of hand drying equipment is essential to the hand washing process, yet the lack of the recommended inclusion of both paper towels *and* air dryers suggests the need for hand drying equipment is an after thought in the hand washing process[12]. The interventions required for hand washing, where they are located and how they are managed also illustrate the need for greater configuration of inclusive design; where to ensure actual use of the intervention, its placing within the architecture and how the intervention is serviced, all need to be considered in the provision and the affordance of dignity.

8.1.7. The dignity of disposing the products of excretion

In April 2005 the Disability Rights Commission (DRC) issued a news release which described how Liverpool City Council made an out of court settlement to Ms Rosemary Walker concerning lack of suitable bins in toilet provision. Ms Walker who requires a colostomy bag, had to openly admit that she had a colostomy and was having trouble changing the bag due to the lack of bins[13]. The lack of provision resulted in a special disposal box having to be brought to the building. Ms Walker, supported by the DRC, felt she had experienced 'humiliating treatment because of her disability' (Hanson *et al*, 2007).

[12] One informant began a local campaign to raise awareness of the need for the inclusion of paper towels in the accessible cubicle in his local area. They informed this researcher that providers had been told that the inclusion of paper towels in the cubicle was considered a 'fire risk' and they had been recommended to remove the provision. Using the search criteria 'paper towel fire risk toilet' I found one document that identified paper towels as a 'source of fuel' fire risk (Rawe, 2009)

[13] At the time of the incident Ms Walker was attending a Disability Awareness Course run by Liverpool City Council.

The provision of bins within the toilet cubicle may not be considered an essential, but as Ms Walker's case illustrates, the lack of bins can result in the loss of dignity for users. Colin commented that incontinence '*pad disposal is always a problem because of a lack of disposal in men's toilets'*. In standard toilet accommodation for women, there is often provision of sanitary bins, sometimes to the extreme[14], yet bins are rarely found in male toilet provision. This will lead to men, who may be just as comfortable using their gendered standard provision for specific needs (such a continence pads), with no choice but to use the accessible toilet cubicle (in which bins are recommended), due to the lack bins in their assigned gendered provision.

The Heath Services Advisory Committee (1999) classifies human hygiene waste as 'offensive/hygiene waste'[15] and identifies it as 'not hazardous' and therefore 'does not require specialist treatment of disposal' (HSAC, 1999; 1-2). The wastes covered in this category are listed as: Human and animal waste (faeces), incontinence pads, catheters and stoma bags, nappies, sanitary waste, urine[16], and are catergorised as being products of a healthy population. These wastes do not require separate bins for disposal.

In the accessible toilet cubicle, Hanson *et al* (2007) found that 45% of facilities did not offer a general waste bin or a sanitary bin, and 78% of cubicles did not have a bin that would be considered suitable for incontinence pads, stoma bags, catheter bags and tubes and urine containers. In cubicles that did provide bins, some had up to three separate options (figures 55 and 56)

[14] As illustrated in figure 15 and 16 in chapter 4.
[15] It may be questioned whether bodily waste (a natural output of the body) should be classified as 'offensive', given the social and cultural stigma that may also leach into society's perceptions of toilets as also 'offensive', dirty and disgusting places, unloved and therefore uncared for – but essential.
[16] Also included are: nasal secretions, sputum, condoms, vomit, soiled human bedding from a non-infectious source, medical and veterinary items of disposable equipment (gowns, casts etc), plaster for personal use, animal hygiene waste (faeces, bedding), wastes from non healthcare activities (tattooing and piercing).

Figure 55. Accessible cubicle with sanitary and pad bins

Figure 56. The same accessible cubicle with a third bin by the door.

The issue of bins generated 67 responses. The narratives of informants' experiences focused on the provision of sanitary bins in standard cubicles and bin provision and management in both accessible and standard cubicles. As informants from the NAfg observed, *'bins are trouble. They're either smelly, in the way or don't exist'*.

Large bins for pad / nappy disposal were often found to be placed in the transfer space. Experiences of bins *'in the way'* and *'blocking'* the transfer space, were described by Fred, Marsha and Lisa, Billy, and Jeffrey, and informants told how this often resulted in having to move the bins before being able to access the WC pan. Miles, Jean, Maria, Pam, Marsha, Lisa, Eileen, Billy and Jeffrey all recalled that they *'sometimes have to move bins'*. Lisa and Marsha added that they sometimes *'have to move more then one'*. When Sharon found a bin to be blocking her access she *'asked someone to come in and move it'*, and Jessica stated that she *'often has to get my carer to move bins out of the way first'*. Abigail told how she would move the bin herself except *'sometimes they can be really heavy'*. Pam commented that even though she would move the bin *she 'doesn't like touching them'*. Tara told how *'when bins are in the way I just drive into them',* and Carla explained how *'bins get in the way. I don't move them, as I don't want to handle them. Generally I nudge them with the chair'*.

Sanitary bins are to be found in nearly all[17] standard cubicles within women's toilet provision. As discussed in chapter 4, the BS6465 (1996) includes the provision of a sanitary bin in the space dimensions of the cubicle, but as the chapter illustrates, the size of sanitary bins themselves can vary enormously. For many women the sanitary bin intrudes on an already cramped space of the cubicle, as Lillian expressed;

> *'I absolutely hate those toilets where you've got a sanitary bin squashed against one leg and a toilet roll dispenser squashed against the other. An extra 10 centimeters would mean I don't have to touch those things'.*

Alice found that sanitary bins *'get in the way'*, and Jenny thought they were *'stupid… too big for the cubicle'*. A female informant of the StCSFCfg

[17] During the course of fieldwork, a facility was observed in Sheffield that only offered sanitary bins in every other cubicle. The attendant informed this researcher that this was because not all women need a sanitary bin all the time and that they had the choice of which cubicle they could use, depending on their need.

commented *' I don't like the sani bin touching you'* and Susan and Rosa also found *'you almost end up sitting on it'*. Diana found that the;

> *'sanitary plastic thing takes up half the room. I don't use them anymore obviously at my age, and I know they are important but they take up half the room and are really badly designed'*.

The NCTfg and MMfg also found the sanitary bin became a fascination point for children, one mother commented that her son, *'always wants to play with the bin'*, and another found *'children seem to love touching bins… it would be good if they were out of toddler height'*. A mother from Manchester described how her daughter *'likes to put things in the sanitary bin, she gets her hands right in there*'.

Narratives on the management of bins focused on the need for regular emptying, invariable experienced by informants as *'overflowing'*, *'disgusting'*, *'always full'* and *'need emptying'*. In addition informants described how bins were *'not big enough'* (StCSFCfg), and *'not adequate'* (NAfg). Sally found bins for incontinence pads to be *'very small, you really have to shove them in, it's not good design'*. The NCTfg commented that there *'never seems to be enough bins'*, whilst Pam felt *'you rarely get a sanitary bin and a waste bin'*. Of experiences in accessible cubicles, Dan found that *'bins are often not there for paper towels let alone pads'* and Adrian thought that *'there never seems to be the right kind of bin, there's always sanitary but not for rubbish'*. Both Alan and Vicki felt a consequence of this lack of bins was that paper towels *'get piled up in the corner'* and *'piled up all over the floor'*.

A participant from the NAfg told how the lack of bins meant they *'often have to carry my waste around with me and dispose of it in a public area'*. Colin, told how there were *'very few [bins] in public toilets, private or public buildings so I look for the nearest rubbish bin to dispose of wet pads'*.

The provision of bins within the accessible cubicle is variable with some facilities offering no bins (Hanson *et al*, 2007). Helen told how, in her local accessible toilet, there was no sanitary bin provision so she *'wrote to the council to remind them that disabled women need them too'*. In contrast other facilities offer up to three different bins. Nancy found that if the accessible cubicle was shared with baby change there would be *'nappy bin and waste bin… some toilets feel like they are really cluttered with bins'*. Miles commented that *'sometimes I feel there are too many bins, some toilets seem to barely be the size and then you get all these bins'*. Richard and Jack felt there were *'too many bins'* and Jack added that *'the infrastructure can't take all these items'*. Sarah listed the bins she came across in one cubicle as *'sanitary disposal, separate waste bin and a swing bin'* and Pat stated that *'bins always seem in the way, especially when there are lots of bins'*. Bins also proved problematic in other ways. Lisa told how;

> *'bins themselves are difficult for me to use. I can't aim the rubbish into the slot, as I have to rest my head against the wall for balance. Other times I can't get to the bin from the wheelchair. It would be good if bins also took glove waste and continence pads. I can't reach the bin from the toilet'*.

Jackie, Glenda (wheelchair users) and Margo (walking aid user), all questioned the inclusion of pedal bins within the accessible toilet; Jackie called them *'useless'*, Glenda stated she *'can't use that'* and Margo exclaimed *'how am I expected to use that'*.

8.1.7.1. The dignity of disposing the products of excretion summary

Bins are an important element of affording dignity in toilet provision. They are required for the disposal of paper towels in the process of hand washing, as well as sanitary items, continence pads, and other waste such as catheter equipment, colostomy and urostomy bags. Hanson *et al* (2007) suggest that receptacles for items such as paper towels and general rubbish would need to be emptied regularly so would require 'their own separate bin'. However, for

other ‘human’ waste such as sanitary etc. one all-purpose bin would be suitable, and would remove the need for multiple bins. This suggests there is room for the development of an all-purpose inclusive bin design that would be suitable in both the standard and accessible toilet accommodation, as well as guidance on where the bin should be placed so as to not impede access to the WC pan. As described above, the issue of bin provision in publicly accessible toilets also provides an example of where the trinity of design practices are not integrated, from the internal architecture of where the bin should be located to the product design of size and usability, to the servicing of the bin in disposal of contents and, if free standing, placing of the bin in provision.

8.2. Affording Safety and Security

In the journey to, and use of, the publicly accessible toilet this thesis has explored informants’ experiences of the barriers they encounter on the way to the facility and the barriers they negotiate in the actual using of the accessible and standard toilet cubicle. These experiences have been framed using the concept of affordance to highlight that access requires more consideration then merely the ability of the body to complete a task. By considering how the immediate environment affords the journey to the lavatory, how the design decisions within the cubicle affords the act of excretion and do so with dignity, it is proposed that definitions of design inclusion need to be broadened to consider not only the task itself but the conditions of that task, especially when undertaking the deeply personal and private act of toileting. A further consideration of this action will now be explored through how a sense of safety and security is afforded to the informants through the design of the publicly accessible toilet.

In *The Death and Life of Great American Cities* (1961), the journalist Jane Jacobs suggested that, when thinking about the city, *‘the bedrock attribute of a successful city district is that a person must feel personally safe and secure on the street amongst all these strangers’* (ibid, 1961;40). Jacobs proposed

three key qualities that would 'make a safety asset' of a street populated by strangers. These were; firstly *'a clear demarcation between what is public space and what is private space'*; secondly, *'there must be eyes on the street, eyes belonging to those we might call the natural proprietors of the street'*; and lastly, *'the sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce people into buildings…'* (ibid, 1961; 44-45).

The public toilet, and in some instances the publicly accessible facility, are often accessible from the street and within its own environment, can sometimes resemble the street. The facilities are clearly demarcated into a public area outside, in which the 'eyes on the street' help give people a sense of safety and security, especially it there is high usage, and a private domain of the cubicle, in which private acts of bodily function take place. Yet, for many users, the thought of using a publicly accessible toilet, especially one owned and operated by a local authority, is filled with dread and often leads to avoidance. Greed (2003) suggests that a lack of public toilets, and an avoidance of those considered dubious, contribute to what are perceived as the 'hidden dangers' of the street. Making areas less welcoming for people, especially women, therefore becomes a 'multiplier effect' that itself contributes to a dearth of Jacob's 'eyes on the street'. This inevitably filters down to any toilet provision that does remain, that it becomes poorly used, and its emptiness contributes to a sense of foreboding for people who may enter there.

Kira (1976) suggests that the reputation of the public lavatory is already tainted by its 'off bounds' character, that makes the facility 'more attractive for a variety of increasingly anti-social and criminal activities' (ibid, 1976;207). He adds that this reputation has been 'institutionalised' and resulted in the public toilet being considered a 'safe place' for non-toileting behaviour such as sexual encounters, illegal substance use and vandalism. Kira also considers the 'helplessness and immobility' of a person during the act of excretion.

Many, especially women will be partially naked, and this Kira argues, make the space of the toilet more attractive to *'those who take advantage of users at this moment'* (ibid, 1976). This sense of helplessness and immobility may be intensified if a user is also managing differing abilities and/or health conditions.

In considering how a publicly accessible toilet might afford safety and security, 192 comments from informants followed two distinct experiential narratives of;

- The external environment including; where situated and reputation.
- The internal environment including; affording a sense of security through locking[18], lighting, alarms and attendants.

8.2.1. Affording safety and security; the external environment

The legacy of Victorian philanthropic public toilet provision has ensured that many facilities have been located out of view of the public gaze. Whilst this afforded the sensibilities of Victorian society, modern society finds such siting and access to be problematic. As Jacobs (1961) noted, modern cities, filled with strangers, require an 'eye on the street' to oversee public behaviours. Take away such observations and a sense of insecurity sets in for many potential users. When Shirley was asked what she considered one of the main issues affecting public toilets, she responded, *'I think safety is the main issue isn't it, just having them in good places'*.

Informants' experiences focused on the importance of where a toilet was situated for safety concerns. May, aged 75 stated that;

> *'if a toilet is badly located I don't feel safe. I won't use it. Especially if I'm on my own. There was one toilet in a shopping centre that was up a dark corner and you would get gangs of lads standing about – I was a bit dubious of using that one'*.

[18] The affordance of access in physical act of locking the door, including problems completing this action and different types of lock were discussed in chapter 6.

Leah, who was in her late thirties, told how she felt *'vulnerable, I'm not a big person… I have to feel safe but sometimes I don't. Public toilets need to be in high visibility areas especially in the evenings'*. Susan and Rosa, in their early twenties, thought toilets should be situated in;

> *'busy areas, the busier the area the better, like squares where there are lots of people. One, because they are easily accessible. Two, you would feel safer because there are lots of people around'*.

This importance in the placement of toilets was echoed by the participants of the Bangladeshi Community focus group, who felt provision should be located in;

> *'markets, outside mosques, wherever there are lots of people at one time. It should be visible not only because it makes it easy for people to find but also because of safety issues, people can get hurt, attacked in toilets that are hidden away'*.

Nigel aged 40 and a keen cyclist felt, *'if you tuck them away things are going to happen, people are going to vandalise them because no one is going to see it'*, and Shirley, in her late 50's felt strongly that provision has to be *'in a safe place. Sometimes areas are dingy and it's frightening and you're put off going because it looks a bit unsafe to go round that place'*. Deborah aged 60 pointed to specific provision that she was unsure of;

> *'public toilets in the park – they are in the middle of nowhere, and there are two exits – it just makes you feel nervous. I feel insecure. It might be lovely but I just don't want to use it. Truckers and taxi drivers use it so there are mostly men so that makes me feel uncomfortable'*.

Robert, in his mid twenties found subterranean toilets to be of particular concern;

> *'there's that element of going underground to go to the toilet that adds to a question of security. The old Victorian ones… if someone's going*

to come in after you is it safe to get out again… it's like you're walking down a dark alley and someone is following you'.

David and Lou aged 16 and 17 respectively, felt that the wider location had to be considered when deciding whether to use public toilets, *'it depends on where they are, some places are more or less likely to have crime committed in the area so that has to be taken into account'*, and Samantha, in her late twenties felt the use of toilets *'depends on where it is… public toilets can be a bit kind of seedy'*.

As Kira (1976) noted, the character of the public toilet has become inextricably linked to activities that are not associated with toileting such as vandalism, illegal substance use and sexual activity, the latter both procured and forced. This has resulted in the public lavatory being associated with a negative reputation and being 'off bounds', not only in terms of its physical setting as noted above, but also with respect to its wider social acceptance and use (ibid, 1976). Informants' narratives echoed this negative reputation; Tracey felt *'there's a danger being a women on your own using a loo'* and participants of NAfg commented, *'you avoid loos with a reputation for anti-social behaviour, but sometimes you have no choice'*. The participants of StCSFCfg also felt *'safety is the most important thing*' when using the toilet. Two of the female participants commented that *'I worry that you'll get followed into loos',* and *'I won't go downstairs to use public loos'*. Subterranean toilets were again singled out as problematic from a participant of the Intimate Matters older women's focus group who told how she *'never agreed with those ones where you go down the stairs, never agreed with them, cause you never knew what was down there'*.

Marsha and Lisa associated toilets with *'other purposes then toileting, there's drugs and casual sex'*. 90 year old Diana had heard about toilets to be avoided *'I heard someone say 'don't go near that one, people go there after dark'. Drunks or something'*. Mark, aged 27, felt that toilets attracted *'dodgy*

characters hanging around some of these places', and Maria *'often sees evidence of anti-social behaviour in toilets. I avoid those facilities if possible'*.

The non-toileting behaviours associated with the public lavatory follow three forms; vandalism including destruction of items and graffiti, the taking of illegal substances and sexual encounters. Each of these three behaviours contributes to the sense that the toilet facility is unwelcoming and unsafe, and often 'put off' informants. Jacob who is 89 felt *'ones that are prone to having vandals coming, make you feel vulnerable'*. Sheryl aged 50 thought that *'people are scared to go in if they are vandalised and young people hanging about. People are scared to use it'*. Participants from the StCSFCfg expressed that toilets need to be;

> SCFG1: *'Vandal proof. Robust. You do see some that have steel urinals and bowls as well. They work – they're very hard to vandalise'*.
> SCFG2: *'Not for youth round here it wouldn't be!'*.

Sarah told how she had found evidence of substance use;

> *I did once see syringes in the disabled loo. It wasn't a locked toilet and I was a bit taken aback by it. It wasn't something I expected to see… if I had been a local I might have known that the loo was used for drugs and I wouldn't have used it'*.

Participants from the NAfg also told how some toilet provision was *'used for drugs. You don't want to use it so you avoid it because you don't feel safe'*.

Often informants identified a range of non-toileting behaviours would be associated with provision. StCSFCfg felt, *'graffiti reflects the type of people in the area. I've found drugs evidence in the loo and condoms on the floor. It puts you off using the facilities'*. Belinda was adamant that she *'avoids toilets that show signs of drug use or are too graffitied'*. Larry told how his local accessible provision had;

'been getting vandalised. Druggies had been using it and consequently other disabled people can't use that particular toilet. You're unsafe using it. When you go in you find needles and things. They have taken girls in there'.

For some facilities, the activity associated with that specific environment was associated with sexual contact both solicited and unsolicited. A participant from StCSFCfg told how she had seen *'a man and a girl come out of the ladies toilet. She was in school uniform. I never went back to that McDonald's again'* and another participant in the focus group told how she *'heard about a young girl getting raped in the toilets, so I don't go there by myself. I go with friends'*. Nina, in her early forties, explained that in her local area; *'we have a lot of dogging*[19] *and all that round here as well so it can be sort of undesirable. You know people do get put off by all of that and I don't blame them'.*

Tara mentioned that in a nightclub, she had *'found people having sex in the accessible loo'*. Informants also commented their perceptions of same sex encounters taking place in toilets. A participant from The 'Geezers' Club older men's focus group told how he;

'went to the one along side Bethnal Green station and there were a lot of gay people in there cottaging. I went along to the police station and complained about it. Nothing happened but the place got shut down'.

89 year old Jacob felt;

'there should be more public toilets, free public toilets. Unfortunately with the homosexual business and the vandalism and what have you, they close them all down… there use to be quite a few'.

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[19] Bell (2006) defines 'dogging' as '(hetero)sexual practice or subculture … combines voyeurism, exhibitionism, public sex and partner-swapping or multi-partner sex, and predominantly takes place in secluded sites on the urban fringe, accessed by car' (ibid, 2006;387).

Concerns over the insalubrious reputation of public lavatories was commented on by those caring for young children. Mothers from the NCTfg felt that public toilets were, *'horrible, disgusting, I avoid them at all costs. I wouldn't even try. They often have graffiti on the wall that you don't want your children exposed to'*. Another mother added;

> *'graffiti really is a problem when children start reading. I'm not really concerned with fear of crime – if I need to go I need to go. I'm not really there at the same time as anti-social elements. But I do have some reservations now that he's [son] toileting on his own. I don't know what's in the men's toilets, if there are needles everywhere and graffiti'.*

The MMfg explained how the provision of toilets and concern over safety was a specific issue in parks;

> *'park toilets can be secluded and you have problems with dodgy strangers. Sometimes they put in new play areas but no toilets nearby. You can't send children to the toilets on their own. It's not safe anymore'*.

For many informants the reputation of the publicly accessible toilet preceded their actual experience in the facility. Narratives focused on seeing evidence of vandalism, illegal substance use and sexual activity, but most had not directly experienced any adverse behaviour. However two informants did describe experiences in toilets that had caused them alarm. Claire, who is in her early thirties, told how she was followed into a toilet;

> *'I used the toilet at Baker Street, there was this guy sitting outside and I thought 'he looks a bit weird' but I walked into one cubicle but it didn't lock so I came out and he was in there and thank fully someone, one of the station people, had seen him go in and shouted "oi – what are you doing in there". He said that he thought it was the men's. But I think he had come in to attack me. It was awful that this was in a station and it was only 11am. I've been wary of public loos since'*.

89-year-old Jacob described how, whilst on a break in Brussels, he had been followed into a bar's toilets and mugged;

> *'he came into the toilet just as I was coming out, and unfortunately there was no lock on the door, he came in and banged me to the wall and tore all my trousers down and just took a little bit of money out of my pockets, but fortunately I started shouting and the people in the bar closed the door and got hold of him and called the police'*.

Of the total 166 informants who participated in both the VivaCity and TACT3 projects from which these experiences are drawn, only Claire and Jacob (3.32%) told of alarming experiences taking place in facilities. This suggests that the reputation of the publicly accessible toilet, especially those owned and operated by local authorities, outweighs the actual experiences that take place within the facilities. It is interesting to note that both of these negative experiences took place in privately run provision (the train station and the bar), which are commonly held in higher regard than those owned and operated by local authorities (Hanson *et al*, 2007).

8.2.2. Affording safety and security; the external environment summary

The experiences of the informants as outlined above, suggest that to afford a sense of safety and security in publicly accessible toilets, consideration needs to be given to where the facilities are located, with preference given to spaces that are busy and where a sense of other people reinforces a sense of safety, or that someone will be on hand should an incident occur. In many ways this confirms Jacob's notion of the 'eyes on the street' as reinforcing a sense of security, in light of the wider perception of 'stranger danger' (Websdale, 1996). Yet fear of the lurking unknown, and especially fear of men by women, pervades the perception of the publicly accessible toilet, despite women being more likely to be attacked in their homes by men that they know (Valentine, 1990) and for men to be more likely attacked in public space (Valentine, 1992).

Fear about personal safety in the toilet facility contributes to the poor reputation of this space, already noted by Kira (1976) as a site of privacy for toileting and non-toileting behaviours. This reputation maybe further enhanced for facilities that are located out of the way, in which privacy for other activities such as vandalism, illegal substance use and sexual encounters may prevail. This does not imply that such activities do not happen in provision that is centrally located. During the course of this research, toilets at a busy London bus station were closed down due to an attack on a young man in the men's lavatories (figure 57). Despite this incident taking place on a busy station, the toilets themselves were located just 'out of the way', being round the corner from the main concourse of the bus station. The experiences of Claire and Jacob also suggest that provision that could be considered in the 'private' sector can also transgress the sense of security that is often afforded to such provision.

Figure 57. Crime incident board of an assault in a public lavatory.

8.2.3. Affording safety and security; the internal environment

For many informants, the external environs of the publicly accessible toilet facility appear to fail in affording a sense of security based on the internal activities that take place there, specifically the non-toileting behaviours of others. Such actions can be considered the result of architectural and planning considerations, such as where the toilet is located and the internal

layout of the provision. To extend how the internal environment might afford a sense of safety and security, there needs to be a consideration of the products that enhance users' sense of safety and security, as well as a key service element. These include locks, lighting, alarms and attendance.

The gender issue of female carers being separated from their male charges was commented on by Samantha, who told how, when her brother was young *'I'd bring him into the girls' toilets but now he's ten, he doesn't want to go in there'*. Claire told of a dilemma when looking after her nephew;

> *'he was about 4 or 5 and he got it into his head that he was a boy and wouldn't come into the ladies' loo with me. He ran off into the men's and it was a difficult moment because he was in there on his own and I was left debating as to whether I should go in there after him, because this is a men's loo or what happens to him inside. There was this anxiety of was he safe in the toilets on his own and I really felt that he wasn't'*.

Tessa explained her considerations when using the toilet herself and with her young son;

> *'well one of the issues is do you bring your child into the ladies or not. So there is a safety issue there, depending on what age they are. It could be that they just wander off or it could be that you are nervous that someone is going to take him or something. Now that he is getting older I am saying 'wait for me' out side the cubicle, but quite often I will take him into the cubicle with me. He doesn't want to go in one on his own, as he is worried he might get locked in, because I usually stay with him and do the lock. And now he is getting to the stage where he wants to go to the men's toilets, but I don't want to let him on his own. So that's a new issue for us now because he is aware he is a boy so why is he in the women's toilets but he doesn't understand that it's a safety thing. I've talked to a couple of friends about what age you do let*

them and we haven't really come up with anything. It depends on where it is'.

Informants highlighted the need for confidence in the locking system of the standard and accessible toilet cubicle. Susan and Rosa told how they found poor locks on *'so many toilets that you go to, you have to hold the toilet door closed'*. This action of physically holding the door shut was also mentioned by a female participant of the StCSFCfg who stated *'the door lock doesn't always work so you have to hold the door and go'*, and Samantha told how *'sometimes the lock will be broken so you have to kind of hold it closed'*. Dan commented that, *'you do have safety concerns, especially in the evening when it gets dark early. It can be intimidating, especially if the lock is broken or missing'*.

To discourage the non-toileting behaviours associated with toilets, many providers lock all their toilet provision, ensuring access is only gained by 'legitimate' users, namely customers. Dan told how;

'in one pub I came across a loo with a code lock. You had to make a purchase and get the code on the receipt to open the loo. I was going to go and get the code but found that the toilet was unlocked anyway'.

Pam told how she often had coffee at a local outlet but that she now '*has to ask for the key. It didn't used to be locked but everyone was using it and the loos got abused'*.

Billy who uses a wheelchair told how his local pub;

'has a drug problem in the loo, so has to lock it. Every time I need the loo I have to ask someone behind the bar. It's a major hassle, especially on Friday evenings when the pub's getting full'.

These comments suggest that for some providers, the experience of the RADAR key scheme has been seen to have benefits that might be extended to the standard toilet provision, and as in the case of one informant's local

pub, even locking the accessible toilet out of the RADAR scheme. Yet asking for permission to use toilet provision can be considered to infantilise adults, and demeaning to those who already experience patronisation based on the perception of their ability. Locking toilets also suggests that all potential users will, if afforded general access, abuse the provision. For users of the accessible toilet cubicle, this perception dominates the discourse about locking provision.

Narratives concerning a sense of security within the accessible cubicle, due to the inclusion of locks, were generally in favour of the RADAR system and locked toilets. Richard, Eileen and participants of the NAfg all stated they '*prefer locked loos*' as they '*help keep vandalism out'* (Eileen) and *'keeps children out and is less likely to be vandalised'* (NAfg). Dan thought RADAR *'a good idea because of the abuse toilets get'*. Miles also thought it *'good idea as it does keep people out like drug users and the baby changing – they don't have a key'*.

Jean told how she;

> *'Thinks locked toilets are a good idea. I've come across evidence of anti-social behaviour in toilets and I avoid if I see it. The loos that previously had this problem now have RADAR keys – it's a wonderful idea, but not everybody will use them. Supermarkets won't fit them because they want their loos to be accessible to everybody and that's why they get abused. I feel it's simple to leave a key that they can borrow at the customer service desk – but they won't do it. A genuine user would have a RADAR key anyway'*.

Locking the toilets also improved the quality of the provision, contributing to a sense of security that the toilets were being cared for. Jackie found *'toilets that are not locked tend to be dirtier. The key scheme does generally keep their toilets in better condition'*. Mary thought locked toilets *'very good, nearly always very clean. But if you go to one that's not locked it can be very*

dubious'. Glenda felt *'locked toilets are good and you can always rely on them. The unlocked ones are a bit daunting. Toilets should be locked'* and Billy thought *'RADAR is better, people who have a key don't make such a mess as they appreciate the facility'*. Pat found *'RADAR is easier for public toilets, you feel more confident using them'*.

Adrian found his RADAR key *'also opens my garden shed!'* but still preferred locked toilets *'as there's a good chance they will be in a good condition to use'*, adding *'I feel the RADAR scheme is becoming similar to the blue badge scheme and is being abused by anti-social elements'*. Participants of the NAfg felt locked toilets *'do get abused. The bus drivers at the local station use them, they've all got RADAR keys'*.

Some informants had experienced the failure of a door lock. Faith felt that *'toilets should be secure, someone walked in on me once'* and Danielle singled out automatic locks as causing specific anxiety *'you can never tell if they're locked and you just have visions of someone opening it. I've had that happen to a friend and it was highly embarrassing for them'*. However, one of the mothers from the National Childbirth Trust focus group told how she was *'a bit claustrophobic so I'm fussy about which cubicle I use. I don't lock the toilet door for fear of being locked in'*.

From the prospective of provision that is locked, Susan and Rosa found that train stations also had locked toilets *'so you have to go and ask for the key. I hate that, you don't want everyone to know you're going to the toilet'*.
Informants from the Manchester Mums focus group explained how they felt;

> *'locked toilets are a problem – you just can't go in. At the library you have to ask for the key and (at) some places you have no idea where to ask, sometimes you just don't bother and you find another loo'*.

Mothers from the National Childbirth Trust also told how a local bookshop, *'has a locked toilet, you go to the check out and get a code, or you have to*

stand in a queue to get someone to unlock it. The toilet is clean so there is some benefit'.

Another mother told how;

> *'I was in Marylebone station and I said I needed to change my daughter's nappy and the station a manager and everybody searched for the RADAR key and nobody could find one and in the end I had to change her in the middle of the station'*.

Some informants found their expectations of locked provision were sometimes jarred. Margo told how she found some locked toilets *'to be in a slightly better condition but not as clean as you would like them to be'*. Maria said that she sometimes;

> *'finds [RADAR] toilets can be awful. One time it was even in an attended toilet. I couldn't get in and this attendant curtly informed me it was being cleaned. I mentioned that I needed to use the loo urgently, but when I went in and it was absolutely filthy. I've not been back to those loos, even though it was a RADAR lock it was in a really bad state'.*

Three informants were not in favour of locked toilets. Belinda stated that she was *'quite cross when they started locking toilets. But I can see why it has to be done'*. Samantha felt locked toilets *'is wrong because everybody should have access to a decent toilet'* and Prakesh who uses toilets to manage his diabetes told how;

> *'I go to McDonalds. There are toilets upstairs and disabled toilets downstairs but the cleaner has the key. So you want to find the cleaner before you go in and then by the time you have found the cleaner, I might as well take a bus and go home'*.

A participant of the older women's 'Intimate Matters' focus group told how *'I've got a key to the disabled toilet. I've got it on my key ring. I got it through a friend of mine and I borrowed it off her and had it copied'*. To counter the

perceived mis-use of the RADAR scheme itself, some providers have put the toilets on a second internal key system, resulting in all users having 'to ask'. Pat found her key *'wouldn't work. They put some special strips down the door so you have to ask. Doesn't bother me so much during the day, but I won't use the toilet at night, I'm too nervous'*.

It is interesting to note that informants' utilised other methods should the lock of the standard cubicle door be missing and broken, namely continuing to toilet whilst holding the door closed. Here a lack of functioning locks did not deter use although it did make informants feel uncomfortable and vulnerable during use and may be noted by users to deter any future use of that specific facility.

Hanson *et al* (2007) recommend that if lighting in the accessible cubicle is to be self-operated, it should be accessible to users, set at a suitable height and operational by a closed fist. If a pull cord operates the mechanism, Hanson *et al* suggest that this is not placed in proximity of the alarm cord (see below).

Informants related their experiences on difficulty they had with light switches in the accessible toilet cubicle. Adrian, Helen, Margo, Miles, Nancy and Jeffrey all mentioned *'problems'* and '*difficulties locating the light switch'*. Jean, Margo, Sally and Eileen had all experienced *'light switches that can be too high'*, especially *'when sitting in a wheelchair*'. Jeffrey called for a *'standardised placing of the light switch'*. Adrian explained how he;

> *'has a problem with light switches as they are never in the same place. I have to hunt for them to turn them on which can be even more frustrating when there's no turning space. And then I find the light switch too high for me to reach'*.

Japanese toilet designers have recognised the problem of identifying where light switches are located from a visual impairment perspective and put in

place a standard to ensure that all light switches would be found in the same place within the accessible toilet cubicle.

Informants also commented on other methods of lighting. Jack found a sense of humour in *'going into a dark room to find the light'* and told of a preference for *'some form of sensor lighting'*. However, members of the Nottingham Arthritis focus group found *'sensor lights are problematic'* and Richard described how *'sensor lights don't always work – I have to prop the door open'.* Lisa told how;

> *'I used a toilet that had a motion light that didn't come on until you moved. So initially you're in the dark but then you move and it comes on. I was sitting on the toilet and obviously not moving and all of the sudden I was plunged into darkness'*.

Aside from locking to provide security, good lighting can also provide a sense of safety. The recommended level of lighting in a publicly accessible toilet by both the BS6465 and BS8300 is a minimum of 100 lux. Informants placed great emphasis on the need for adequate lighting in toilets, Nigel commented;

> *'if its not well lit and out of the way you tend to get unsavoury types hanging around there and it doesn't tend to get looked after. If it's well lit and in an open area, you don't tend to get those type of people hanging around there'*.

A male participant from StCSFCfg commented that *'if the toilets are too dark I won't use it'*. Helen *'doesn't like it when it's dark. You can't see what you're doing'*. Maria *'finds lighting quite dim. It can make the toilet dangerous. I've tripped because I can't see properly in dim lighting'*.

Colin felt *'good lighting is essential in a toilet'* and Pat stated that *'the toilet needs to be well lit'*. Jackie and Nancy thought it was *'important to have a good standard of lighting'*. Sarah thought good lighting was *'important for use with a walking aid'*, and Pam and Abigail thought lighting was *'important to*

see everything when transferring'. Leah stated *'good lighting is important as my balance is not good so I have to see clearly'*. Jeffrey, who uses a wheelchair felt *'increased lighting would be beneficial'*, and told how *'I was in a RADAR loo in the pub and they gave me a torch as they hadn't changed the light bulb, even though I had said something previously'*.

One method of lighting toilets is through Fluorescent blue lights (FBL) (figure 58). FBL's began appearing in UK public toilets around 2000, as a design response to intravenous drug users (IDUs) using toilet provision for injecting. The light make it difficult for IDUs to identify veins to inject in and therefore prevents this practice within environments that incorporate FBL's. Parkin & Coomber (2010) found that FBL's did not deter injecting behaviour and also led to increased risky injecting practices. They suggest that the inclusion of FBL's in public conveniences 'do not serve the interests of anybody', this being the general public, people who work in such environments and those whose activities the light is suppose to curtail. Despite DEFRA's 2005 recommendation that blue lights should not be installed in public lavatories, they are often still found in facilities.

Hanson *et al* (2007) found that FBL's make it difficult for people with visual impairments to navigate toilet facilities. People who have stomas reported difficulties cleaning the stoma (an important part of post operative stoma care and health management) in toilets with FBL. Caregivers of children and young adults with autism reported that FBL toilets caused immense distress with clients refusing to use facilities that have these lights.

Figure 58. Accessible cubicle lit by Fluorescent Blue Light.

Informants commented on their experience of using toilets lit by FBL's. Betty called them *'a problem'*, as did Fred who stated;

> *'I have a problem with those blue lights. I have a syndrome where my eyes react to light and where my pupils don't change from dark to bright light rapidly. I'm not visually impaired but I do find blue lights very disorientating. It would be difficult to transfer and feel comfortable'*.

Mary told how she was; *'shocked when I went into a toilet with blue lights. It made me feel dizzy and disorientated. It was the disabled toilet and I couldn't see if the floor was wet'*. Leah described how she had found a *'blue light in a RADAR locked toilet. It was really bad, really uncomfortable'*. A participant from the NAfg explained how *'blue lights are really bad, really uncomfortable. I have photosensitive eyesight and blue lights make me feel ill'*, and Jack told how in FBL toilets he *'can't see properly. I lose my depth of field, they really distort the environment'*. Jack added that he didn't think this form of lighting would *'actually stop anyone actually shooting up'*. Larry felt that although they were *'to stop druggies going in the light distorts for disabled people, makes you feel like you've fallen over'*. The Intimate Matters, focus group described blue lights as *'those awful things'* and had the following exchange on the subject;

IMFG 1: *'you know what that's to do with don't you. Something to do with drugs. Shooting up, so they can't see their veins'*
IMFG2: *'so they just probably stick the needle in anywhere'*
IMFG1: *'probably. Wouldn't stop them would it'*
IMFG 2: *'I stopped using them 'cause they hurt my eyes'.*

Katherine, said that she's not yet experienced a toilet that had incorporated FBL but that if she did she *'probably wouldn't have the confidence to use it safely'*. However Terri thought FBL's might help keep facilities open, *'I think in the inner city with drug use, people quote that as a reason to close places early, but I think you can overcome that with ultra violet light'*, and Sylvie felt FBL's *'stop people hanging around.*

A sense of security is also afforded through the provision of alarms to raise attention if the user becomes distressed, such as through a fall, when using the accessible cubicle. The British Standard BS8300 advises that alarms should be installed in the accessible cubicle[20], next to the WC pan (although no direct reference is made to which side of the WC pan the alarm should be placed).

The alarm should feature a red pull cord that extends to 100mm from the floor. It is also recommended that the cord have two 'bangles' of 50mm diameter. One bangle should be positioned between 800mm and 1000 from the floor with the second bangle at the end of the alarm cord 100mm from the floor. Bangles enable a user who may not have the ability to form a grip, to pull a cord and raise the alarm in an emergency. The alarm system should have clear visual and audible response outside the cubicle and a reset button inside the cubicle within reach of the WC pan, should the cord be pulled by mistake.

[20] Alarm cords are not found in the ambulant cubicle, as this tends to be included within the standard provision. The researcher found alarm system in a female standard facility at the School of African and Oriental Studies (SOAS). The system comprised of a pressure operated alarm that ran around the cubicle at approx. 1 metre from the floor, and was signed as being for use 'in case of attack'.

Hanson *et al* (2007) propose that many people may never activate the alarm but find the inclusion of an alarm within provision 'reassuring'. In their audits of accessible cubicles they found that 69% of toilets did not have alarms that conformed to the required length of being 100mm from the floor. Details such as the colour of the cord, the inclusion of 'bangles' or if the alarm system was in place or working were not recorded in the audit.

Informants shared their experiences of the alarm system in the accessible toilet. Jean, Pat, Maria, Margo and Leah all told of having *'pulled the alarm cord by mistake'* or *'by accident'*. Pat, Margo and Leah had done this in thinking they were *'reaching for the light cord'*. Maria elaborated how she;

> *'sometimes have problems locating the light switch, all the different cords, I got confused with the alarm cord. I'm not sure which is which and now I'm frightened to pull the wrong cord in case someone comes running'*.

Hanson *et al* (2007) found that carers of young people with autism found that the red alarm cord in the accessible cubicle was like a 'red rag to a bull' (ibid, 2007;59) and often resulted in the people they care for pulling the cord. Mothers in the NCTfg and MMfg also told of similar experiences.

> *'children go straight for the alarm cord'*, and *'he always goes for the emergency cord. I'm sitting there with my pants down and he pulls it and there's no reset button. But no-one comes – it does make you wonder'*.

Many informants had a range of experiences with the alarm cord. Fred, Miles, Richard Mary and Maria (C) told how *'the alarm is often tied up or in the wrong position or both. It just gets in the way'* (Fred), and;

> *'sometimes they don't seem in the right place. I'd most likely need it if I was transferring across and slipped down the side of the toilet. Often they're not adjacent to the pan one side or the other and very often they are tied up'* (Miles)

Mary found *'if it's too near the sink and you're washing your hands you sometimes get caught up in it'*. Richard told how *'it gets in the way. My wife ties it up… Hasn't untied it afterwards'*, whilst Maria found alarm cords *'tied up which is very worrying'*.

Eileen who uses a wheelchair also found *'the alarm cord by the door'*, as did Jeffrey who also found it *'is sometimes in the way when you're transferring'*. Abigail, Jackie, Marsha and Billy, all wheelchair users found problems with the alarm, specifically the cord. Abigail felt *'if you actually fall on the floor you couldn't reach it in most places. Nearly all of them are tied up, too short or cut'*. Jackie also found the cord *'in the way, wrapped around the grab rail, tied up and out of reach'*. Marsha told how;

> *'the alarm cord is usually hung somewhere or wrapped around the grab rails. You do get frightened you'll pull it by accident – I did do that once and no-one came. It's a problem when it's wrapped around the grab rails you get scared to touch the rail. Sometimes it's in the transfer space. How do you reach it if it's on the other side. I fall on the floor, that's it – I can't slide over'*.

Jeffrey also expressed a *'worry about accidentally pulling the emergency cord'* Billy told how he had once *'pulled it by accident'* adding *'one of these days I might need it and then it'll probably be tied up'*. (Figure 59).

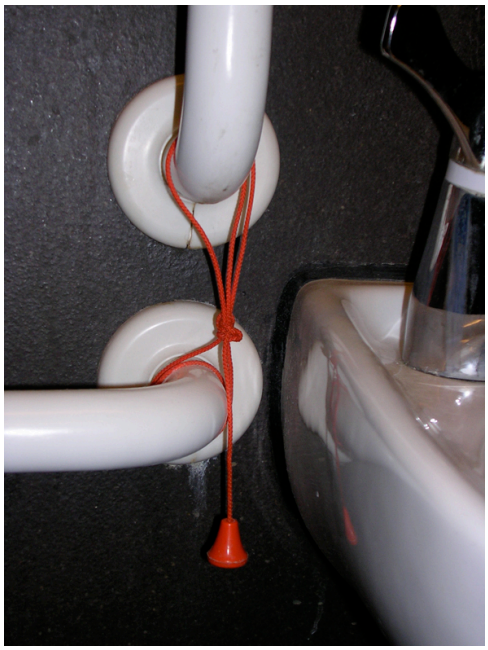

Figure 59. Alarm cord tied up.

Informants also described experiences of when they had pulled the alarm both by mistake and in an emergency. Adrian, Betty and Sally who all use wheelchairs told of their experiences when needing to raise the alarm. Alan found that *'people do not respond to the alarm. I often have to bang the door to raise the alarm'*. Betty, told how *'the emergency cord was not to the floor. I was on the floor for 30 minutes because I couldn't reach the cord'*, and Sally commented that she'd *'never pulled the alarm cord. When I fell in the loo there was no alarm. I had to shout'*. Helen (C) found that her local provision *'doesn't have alarm cords – you sit and holler'* and Mary recalled how she had once *'pulled the cord by accident and someone came banging on the door asking if I was all right. I didn't know what was happening. They told me I'd pulled the emergency cord'*.

Pam told how when she pulled the cord by accident *'found this person waiting outside, didn't do anything was just waiting to see if I was all right'*. Jessica mentioned that she had also once accidentally pulled the alarm cord and *'nobody came*'. And Katherine who uses a wheelchair told how;

'when I fell I didn't use it because I didn't want people to panic. I don't like the pull cord. I don't want to cause a fuss. I didn't get hurt when I fell – it was a situation not an emergency. I didn't want to cause alarm'.

Even with the installation of alarms there is the need for some form of human interaction and attendance when the alarm has been raised. For some informants, an important way to afford a sense of safety and security in the publicly accessible toilets, especially larger facilities, is not through the design of objects of assistance, inclusion and even exclusion, but through the service of physical attendance within the facility. Nancy aged 65 felt the;

'awful design is because the government has to be seen to be doing something, but its all at the expense of the rest of us. Everything is being tailored to the minority, especially in toilets. I think a lot of these problems would be eradicated if we had attendants'.

Claire aged 33 felt that public toilets;

'definitely have a bad reputation as a place where stuff goes on that you really don't want to be a part of… the fact there's there often no attendants there is part of the problem. Often if there is someone there checking them regularly, I think it reassures people'.

Larry aged 69 told how his local provision had been;

'closed down because of the vandalism and druggies if you have anyone there, you know a caretaker, looking after the toilet, once anyone has been drinking and is on the drunk side and goes down there, you have a problem. Apparently they have attacked the caretaker of a particular toilet at nighttime so consequently they closed them down and that's it'.

Beverly aged 79 thought that having attendants was a good idea because *'the sort of people who hang about in public loos, I think that without an attendant, they [the toilets] wouldn't be desirable'*. Josie aged 84 stated that *'safety is*

paramount. The best thing for a public toilet is safety. I would panic if something happened so they should also have an attendant', and 89 year old Jacob felt;

> *'they should have a kind of building where an attendant can be, with cubicles and a safe environment. Something where it doesn't attract unwanted people such as not to have insalubrious activities in there – you know…'.*

8.2.4. Affording safety and security; the internal environment summary

In contrast to the wider architectural and planning considerations of the external environment, affording the safety and security of the internal environment of the publicly accessible toilet was dependent on specific products and how they might be serviced. These included locks and systems of locking, lighting and lighting controls, alarms and their management, and the desire for physical attendance of the facility to deter behaviours not associated with toileting.

Locks gave informants a direct sense of security in separating themselves from other users of the facility in the intimate task of toileting. They therefore afforded security, safety and privacy. In some publicly accessible lavatories, locking the actual provision itself was incorporated by some providers in which access could only be gained through purchase (and receiving a code to unlock the toilet on the receipt), or through personal request. Both systems of purchase and request effectively police the toilet to ensure those who may not have perceived legitimate access are denied use of the facility. Such legitimacy of access is widely perceived to operate through the RADAR key scheme in which informants stated a preference for locking accessible toilets as well as ascribing such provision with notions of cleanliness, not based on hygiene, but on the exclusion of those who sought the space for non-legitimate toileting activities.

The importance of good lighting in the toilet facility afforded not only a sense of safety and security of informants from others, but also from environmental hazards the toilet might present. Good lighting not only allowed informants to see and be seen but also to negotiate wet floors, steps and other barriers they might encounter, as well as ensuring the act of toileting could be accomplished without 'mess' to the self and/or the environment. Good lighting was seen to deter those seeking non-legitimate access to facilities.

A design response to discourage non-legitimate use of publicly accessible toilets, especially for illegal substance use has been the development and subsequent inclusion in provision of Fluorescent Blue Lights (FBL). Previous research (Hanson *et al*:2007) found that such lighting caused distress to some user groups with disabilities. This research extends the informants who find such lighting conditions uncomfortable to include older people and those with mild visual complications. It may also be considered that such lighting has become synonymous with provision in which illegal substances have been taken and therefore it reinforces the negative reputation of the facility. Cockfield and Moss (2002) have suggested that FBL's produce a light that can be considered to offer an erotic ambience therefore, whilst restricting an environment for illegal substance use, creating an attractive environment for sexual encounters. Parkin and Coomber (2010) suggest the inclusion of FBL's in public toilets can incite riskier injecting behaviour amongst intravenous drug users (IDUs) and contribute to the 'symbolic violence of unrealistic expectations' (ibid, 636:2010) of IDU practices in publicly accessible toilets.

Alarms in public lavatories are mostly found in the accessible cubicle, but provoke their own problematic experiences for informants. Whilst they can be seen to afford a sense of security for users, informants' experiences raise concerns regarding the effectiveness of alarms in these environments. A lack of clear guidance as to where the alarm should be situated leads to a lack of standardization as to where the alarm should be found. It can also be considered that this lack of familiarity of where the alarm cord should be

placed does not afford users to develop a behaviour pattern that incorporates a negotiation of their body around the alarm cord. This may lead to the cord often being put out of the way by being ‘tied up’ and ‘wrapped around grab rails’, placing the alarm cord out of reach and therefore rendering the alarm system useless. In some instances, alarm cords were found to be cut (figure 60), creating a redundancy for the system unless a new cord at the correct length is installed. Yet the inclusion of an alarm system in the accessible cubicle is not a stand-alone product and necessitates human intervention should the alarm be activated.

Figure 60. Cut alarm cord

Such human intervention was also called for by users of standard toilet provision as a means to deter non-toileting behaviours (NTB) in lavatories. This intervention was identified as the need for attendants that afforded a sense of safety and security by offering a custodian of the provision or a permanent set of ‘eyes on the street’ (Jacobs, 1961) that helps deter NTB’s.

8.3. Affording Comfort

In this final consideration of the design of publicly accessible toilets and how the design of these facilities affords use, the topic that will now be examined is

how comfort is afforded through design. Comfort is considered an important element in the management of continence, with patient information literature urging those managing continence problems to be relaxed when excreting. It is proposed that such elements of physical relaxation can only be achieved within facilities that offer a sense of dignity, safety and security and comfort.

Comfort is a difficult category to define within the design of the public environment. The majority of the literature focuses on elements of thermal comfort, and this is particularly apposite within the private realm of the home. Whilst the actions of excretion in publicly accessible toilets may involve periods of partial undress, informants did not comment of experiences of environmental temperatures, except, as discussed above, to comment on the issue of cold-water provision for hand washing in cold weather. Based on informants' experiences, comfort will be attributed to other external finishes that aid the action of toileting, but are not necessarily essential.

The sociologist Elizabeth Shove has written extensively on the issue of comfort, but has directed the majority of her enquiries towards the issue of thermal comfort. However, Shove does detail the emergence of defining comfort. In *Comfort, Cleanliness and Convenience* (2003) she highlights how comfort has multiple definitions, from sharing and support to decision-making and life choices. Shove cites Crowley's modern incarnation of the term as, *'self-conscious satisfaction with the relationship between one's body and its immediate physical environment'* (Crowley, 2001 cited in Shove, 2003:24). It is suggested that comfort can be a state to be achieved as well as a state of being, that reflects the relationships between people as well as the relationships between people and objects that may enhance physical and mental wellbeing (Shove, 2003).

Smith (2007) considers the history of comfort within sanitary accommodation to have emerged in the 1850s with the showcase of the domestic interior at the Great Exhibition in the Crystal Palace in 1851. The details of English

interior design including, domestic plumbing arrangements, being associated with comfort led to the term 'La Luxe Anglaise' being used, especially to praise the interior control of temperature and ventilation (ibid, 2007). It is of note that this showcase of English comfort at the 1851 Great Exhibition was also the showcase of the first public lavatory (Greed, 2003).

Yet it is to be noted that such considerations of comfort are applied to the domestic realm, in which those in the immediate environment make choice and decisions on the necessary objects and conditions of comfort. In contrast, the properties of comfort in public space will be decisions made for us by others. In many instances the users do not choose the technologies of comfort, they are chosen for them. For many users, the perceived levels of comfort, and tolerance of being uncomfortable, may differ between the domestic interior and public space.

In considering comfort within this research, a series of specific objects, environmental attributes and architectural features were identified by informants as being 'useful' in the publicly accessible toilet, but not a necessity to the act of toileting. These include; coat hooks, shelves, mirrors and ventilation. Informants made a total of 126 comments on these specifics, the narratives of which followed; the provision for hanging coats, placing items and checking decency and the desire for olfactory respite.

8.3.1. Provision for hanging coats, placing items and checking for decency.
The provision for hanging coats is met by the inclusion of hooks within the cubicle. Coat hooks are a designated design feature of the British Standards and the Building Regulations. BS8300 recommends that two coat / clothes hooks should be included in the accessible cubicle[21]. In their audits of accessible cubicles Hanson *et al* (2007) found that only 14% of cubicles had at least one coat hook at the correct height, accessible to wheelchair users. Hanson *et al* note that users 'reported that the inclusion of coat hooks would

[21] Chapter 4 details the placing of coat hooks in the BS8300 cubicle.

greatly improve their experience of using an accessible toilet' (ibid, 2007;58). There are no recommendations in BS6465 for the standard toilet cubicle to include a coat hook.

Informants described their experiences when there were there was no provision of coat hooks. Alice *'would like to see coat hooks'*, whilst Jean and Margo described them as *'helpful'*. Jack described them as *'beneficial'* and Pat felt they were *'needed'*. Katherine and Jack thought they would be *'good'* and Jack added that *'one is never enough'*. The MMfg described coat hooks as *'important'*, as did Jenny who elaborated on their use *'in the winter, getting through all the layers of clothes to get your pants down'*.

Fred, Betty and Jack felt *'there should be two coat hooks'* at *'varied'*, *'two'* or *'multiple'* heights. Miles commented that they *'would be useful, but at a height that can be reached'*. Helen told how she *'would like to see [coat hooks] at an accessible height. I can't reach up, I'm quite short'*. Sharon had found that *'sometimes they are just too high for me'* and Leah explained the need for *'coat hooks at wheelchair level. At the moment I have to give everything to a friend to hold'*. Tara explained that she *'wouldn't use the coat hook – probably couldn't reach'*.

Adrian, Dr A and Eileen all told how due to either the lack of coat hooks or their inaccessible placement in the accessible cubicle they *'used the back of the [wheel]chair'*. All three informants felt the inclusion of coat hooks would be *'handy'*, *'good'* and *'should be available'*. Carla told how she couldn't use coat hooks as they are *'too fiddly and difficult because I need to lift my arms up'*.

Informants also emphasized the multiple uses of the coat hook, not only for clothes but for bags as well. Maria described how it was *'difficult to use the toilet if you have a coat and bag, so a coat hook is important'*. Pam described the benefits of having a coat hook when she needed to take her coat off, there was *'far less to fight with'* adding that if there was no coat hook, *'I don't want*

to put my coat on the floor, so I try to jam it in the [grab] rail and then jam my bag on it'. Marsha explained that *'there are never any hooks so bags have to go on the floor whilst you juggle yourself around. I have hygiene concerns with bags on the floor but with no hooks you have no choice'.* Samantha commented that with door hooks, *'you get them in small cubicles but not in the accessible loo. In the small cubicle some are at a height I can get my bag on but in some the actual size of the hook is too small'.*

The size of the hook in the standard cubicle was also commented on by Sylvie who felt *'a substantial hook on the door is something that isn't always available and you find yourself putting your bag on a wet floor with god knows what'*. Audrey felt that

> *'you need somewhere to hang your bags when your sitting on the loo so you need a hook at least, because I hate putting anything on the floor. You don't know how clean the floor is so I always want to put my handbag hanging up somewhere'*.

90 year old Diana described in detail the problems she experienced with coat hooks;

> *'oh the thing that is quite wrong that could be put right is that I have to hold my shopping bag very carefully to reach the hook… it's way above my head height, it must be six feet high… they've done a very silly thing, nobody of five foot or under can hang a coat or mackintosh, sticks or shopping bag, and you never in any of these places want to put them on the floor even if they are clean and then you have a simple hook with a stiff angle and you've got to try to get it [bag, coat etc] off again'.*

Janice asked for *'a hook on the door please, for your bag. Often men who design loos never think about that'*, yet a participant from the Geezers Club focus group also commented that, *'there are no hooks on the doors, and you don't want to put coats on the floor, the floors are invariably wet. If it's like that*

I invariably hang it over the toilet roll holder'. The male participants from the StCSFCfg were also noted to be keen on having coat hooks, more so than the female participants'[22].

As with a lack of coat hooks, informants described the lack of shelf in the cubicle resulting in having to put bags and gloves, used specifically for manual wheelchair use *'in the sink'*, which as Katherine observed *'is usually wet'*. Billy commented that *'the dirtier the toilet the more I want a shelf, especially when I have shopping. I would rather put it on the shelf than on the floor and than on my lap'*.

The provision of a shelf in the design of the accessible toilet cubicle has featured in both the BS8300 and Building Regulations guidelines[23]. Their inclusion has been predominately defined as an aid to users who are managing colostomy and/or urostomy equipment. However, at the time of the implementation of Part 3 of the Disability Discrimination Act (2004) the addition of a shelf in accessible toilet directly contravened advice under the 'Secured by Design' initiative. Hanson *et al* (2007) describe how the inclusion of a shelf in the accessible cubicle was only found in 3% of facilities and reported that 'designers and providers are reluctant to include shelves within the toilet cubicle itself, due to their association with illegal substance use' (ibid, 2007; 54). There are no recommendations for the inclusion of a shelf in the standard toilet cubicle.

Jack, Dan, Pat, Tara, Katherine, Glenda, Leah, Alice, Sharon and Jeffrey commented that the inclusion of a shelf in the accessible cubicle would be *'good'.* Jeffrey especially thought it would be good for his *'personal equipment bag. Having a shelf next to the loo would be fantastic'*. Jackie, Philip and Jeffrey thought it would be *'useful'*, Philip added *'especially in*

[22] My interview notes from this group noted; 'both thought "coat hooks would be good" males seem a bit keener for coat hooks'.
[23] Chapter 4 details the design recommendations of the colostomy shelf.

winter for gloves'. Jean and Eileen thought it would be *'very helpful'*, and Belinda, Nancy, Maria and Margo thought a shelf would be *'handy'*.
Helen commented on how she would,

> *'like some sort of shelf for my handbag. I need to take it off when I use the loo, but it needs to go on a raised level so that I can reach it and put it back on afterwards. I sometimes use the baby-changing bench as a shelf, as well as somewhere to put my coat'*.

Sarah described how she;

> *'carries a shoulder bag, but there is nowhere to put it in toilets. In the disabled toilet, because the room is so big and because they are unisex, I am loathe to put my bag down on the floor. So I have to have someone come in with me or leave my bag with someone. I've not come across any toilets that meet the [British Standard] recommendation with a shelf in. It would be helpful. I did see a loo with a shelf in but it was too narrow to be useful'*.

Adrian also mentioned that he *'had rarely seen a shelf in the disabled toilet. I often have papers from meetings and always have to put them on the floor as there is nowhere to put them'*.

Discussing the inclusion and experience of mirrors in the accessible cubicle, Sally commented that she, *'would like one at the right height, same with the shelf and the coat hook'*. The provision of mirrors in the accessible cubicle are also detailed in the BS8300. The guidance suggests a mirror should be fitted above the basin and a secondary full-length mirror placed in the cubicle[24].
Alice and Sarah mentioned that they *'would like a mirror'*, Billy said he would *'appreciate'* one. Jean thought a mirror *'would be nice'* and Jessica thought it *'would be good if there was a mirror'*. Dr A commented that she *'would like a mirror so that I can check I'm dressed properly after changing'*. This was echoed by Glenda, who thought it was *'a good idea to have mirrors so that*

[24] See chapter 4 for dimensional placing of mirrors.

you can see yourself dressed afterwards'. The participants of the StCSFCfg felt *'mirrors are important'* and mothers from the NCTfg found full length mirrors *'handy for parking the buggy in front of'* as they keep their children *'distracted'* whist mothers use the toilet.

Where mirrors were found to have been provided, informants commented that they were set at an inappropriate height for the potential user. Miles had observed that the mirror above the basin *'was never at the right height. They always seem to be at standing height not sitting height. It's an exception to get a one at sitting height'*, Tara felt it *'could be lower'*, and Eileen found it *'sometimes too high'*. In contrast, Mary *'sometimes finds it a bit low'* and Betty thought it was *'too low. It's not at a height for ambulant disabled people'*.

Pam commented that she had *'only seen loos with them [mirrors] above the wash basin'*. Other informants, who felt provision should also include a full-length mirror, also touched upon this issue. Fred felt the *'mirror above the sink needs to be supplemented with a full-length mirror'*. Tara, Margo, Pat, Adrian, Fred, Mary, Dan and Jeffrey all specifically mentioned they would *'like'* a full-length mirror as well. Pat, Margo and Dan specifically mentioned they would like this to *'check'* themselves after toileting. Betty and Eileen felt a full-length mirror was a *'need'*, and Nancy thought it *'would cover everyone'*.

Beyond the accessible cubicle, users of standard provision also commented about mirrors. Susan and Rosa told how;

> *'mirrors are another thing – a lot of places don't have them. I guess they get broken so places don't include them, but when your out and in the toilet you want to be able to fix yourself and toilets just don't have any at all'*.

8.3.2. Provision for hanging coats, placing items and checking for decency; summary

Coat hooks are considered important to ease the burden of clothes and bags when toileting in publicly accessible facilities. Their addition to the design of the cubicle transcends both accessible and standard provision as well as gendered facilities. In all cubicles there is a need to consider the height of the hooks' placement, and consideration may also be given to the affordance of the hook itself with regards to ease of placing items on the hook, and removing them after toileting is completed.

For many users, especially those of the accessible toilet cubicle, the inclusion of a shelf would increase comfort, not only to access items that might be required for toileting such as the shelves prescribed colostomy / urostomy equipment (pouches and stoma cleaning materials), but also for access to catheter equipment, gloves for self evacuation and menstruation products. In addition a shelf would also provide a place to for manual wheelchair users to put gloves, and for all users to place items that might be needed for personal appearance, such as hairbrush and makeup bag.

The inclusion of the mirror in the accessible cubicle was commented on by users as being required to 'check themselves' after they had toileted, making sure they are dressed appropriately for leaving the facility. In addition, the mirror also offered the opportunity to pay attention to personal grooming such as makeup and hair. The lack of mirrors was also commented on by users of standard toilet provision. As part of a 'secured by design' initiative, stainless steel sheets that offer some form of reflective surface but which cannot be broken often replace glass mirrors. Cockfield and Moss (2002) note that mirrors were often used to attract attention of those seeking sexual liaisons in toilet provision, especially in men's facilities, and poor reflective substitutes or the complete removal of mirrors was suggested to restrict this behaviour. This 'secured by design' approach entails that the actions of a few potential users mostly in standard provision for men outweigh the comfort of the majority of

users of both genders. In addition, if adopted as a general design feature, the resulting poor quality substitute or lack of mirror, may suggest that the facility is a site of non-toileting behaviour when no such behaviour has been observed or reported. The inclusion of these three design interventions within the accessible and standard toilet cubicle would afford users greater comfort in using provision.

8.3.3. The desire for olfactory respite

Informants were keen that toilets did not smell, especially that such odours were not those identified to be from the bodies of previous users. The only mention of ventilation in the BS8300 is the need for ventilation fans to be quiet so as to not cause distress to users. This suggests that ventilation is a predetermined attribute or 'given' in the toilet facility, especially one that does not have access to natural ventilation[25].

Miller (1997) describes smells as *'pervasive and invisible, capable of threatening like poison; smells are the very vehicles of contagion'* (ibid, 1997;66). Historically, bad smells have been associated with disease, whilst good smells were considered curative'. This binary of positive and negative odours can also be linked to people and places. Miller describes how the writings of George Orwell, particularly *The Road to Wigan Pier* described the smell of the working class, and suggests that smell *'ranks low in the hierarchy of senses', resulting in the 'best smell' being 'no smell at all'* (ibid, 1997;75).

The narrative of *'smelly toilets'* was raised by informants, who felt there *'needs to be good ventilation'* (MMfg and StCSFCfg). Dan commented *'I do get concerned about odours'* and Audrey stated *'I certainly think there should be good ventilation'*. When asked what she considered to make a toilet bad? Samantha responded *'smell'* and Jack stated that *'it can really stink if there's bad ventilation'*. Participants of NAfg felt that *'with no ventilation, the smell*

[25] Details of the ventilation guidelines can be found in the British Standard BS 5720 Code of Practice for Mechanical Ventilation and Air Conditioning and Approved Document F of the Building Regulations.

lingers. All those multiple users, you get bad smells'. Alice found *'it reeks in there sometimes'* and Danielle asked *'is there some way of removing smell. There needs to be air circulation'*. Glenda mentioned that she *'likes good ventilation but would also think it's important for the attendants'* and Adrian liked good ventilation as he *'sometimes finds the cubicle a bit claustrophobic'*. Jean thought ventilation was;

> *'really important' and associated bad smelling toilets with cleaning schedules 'quite a lot of the time the disabled toilets seem to be at the bottom of the pile for cleaning because they're often off on their own. I sometimes wonder if they're missed off… because they don't seem as clean as the ladies'… and the smell is a lot worse in public toilets'*.

Bridget described one toilet she visited regularly as;

> *'god awful, and it won the 2008 Loo of the Year award which is astonishing because it just reeks, it stinks, so as soon as you go in there you just feel it's filthy whether it is or isn't, it just smells bad'*.

Bob admitted that *'I myself hate using stinky loos, it's not a pleasant experience, and it's a necessary evil'*. Vicki described dealing with unpleasant odours in toilets as *'a matter of scrunching up your nose and getting on with it, leaving with a minimal amount of contact'*, and Janice felt that *'adequate ventilation is very important. Windows would be preferable but then they have the problem of vandalism, but these silly little things they have in the ceiling, they don't work and they are horrible'*.

Informants raised concerns regarding hygiene in sharing provision with baby change. The Nottingham Arthritis focus group commented that *'sometimes you're put off using the disabled loo because it's dirty due to baby changing'*. Jack not only spoke of having to wait to use an accessible cubicle that was being used for baby change but 'the smell after they've used it is awful'. Although Mary mentioned that she 'doesn't mind' shared provision with baby change 'it does make the toilet a bit smelly… I think provision should be

separate' and Leah stated 'I'd prefer it if the disabled toilets didn't have baby change in it because of the smell. Sometimes the bins are overflowing with nappies'.

8.3.4. The desire for olfactory respite summary

Informants' experiences of poor ventilation left lasting impressions, and they expressed that good ventilation was important for the toilet facility. Poor ventilation left informants with a sense that the provision was dirty, and unpleasant to use, and can be considered to reinforce the perspective that publicly accessible toilets are unpleasant. Whilst bad odours did not deter outright use, it did result in a sense of discomfort when using the provision. The desire for ventilation to ease the odours of body emissions created through the necessary act of toileting can be considered an essential aspect of providing comfort for users.

8.3.5. Comfort Summary

Comfort may not be considered a priority in the design of publicly accessible toilet provision, but as highlighted above, certain design elements such as coat hooks, a shelf, mirrors and good ventilation can improve the experience of the user by affording greater comfort. However, in some instances of publicly accessible provision, these 'comforts' can be seen to conflict with design that attempts to prevent non-toileting behaviours, such as the omission of a shelf for illegal substance use, mirrors for eye contact precluding sexual liaisons, and natural ventilation sources from windows to deter vandalism. Yet for many users, the inclusion of these features would afford a more comfortable experience of toileting, in what is for many a 'natural' but very difficult process.

8.4 Conclusion

This chapter has presented the informants' experiences of current toilet designs failure to afford dignity, safety, security and comfort. Bichard et al

(2008) have suggested that there are three phases in the ritual of toileting[26] *in which; '…preparing to empty ones bowel or bladder is the preliminal phase, the act of toileting the state of liminality, then washing our hands after using the lavatory is the postliminal phase, preparing our clean return into wider society. Yet for many public convenience users this last phase is denied them'.* (Ibid, 2008;81).

It is suggested that the details of this postliminal phase include disposing from view of the body's waste through flushing the toilet, washing the hands to also rid the body of any polluting residue and disposing of any additional items directly associated with toileting. If the provision on offer fails to afford these actions to take place, then users may experience a loss of dignity. As Mattson & Clarke (2011) have suggested dignity is linked to a person's sense of wellbeing, which in turn are formed from relationships with others, influenced by the physical world and bounded by individual and wider social values.

Following Woodhead *et als* (2003) three aspects of dignity, where design elements of the toilet fail to afford dignity, there can result a loss of the;

- Dignity of identity (self respect, integrity, trust)
- Human rights (equality, choice)
- Autonomy (independence, control)

Partitions provide visual privacy whilst toileting, but often do not disguise any noises or smells that may be associated with the act. For some users this can be embarrassing, and pose a loss of dignity, especially of self-respect, but also in trust of the cubicle design, generating knowledge that such partitions will only offer visual privacy and will not protect the user from sharing other emissions of excretion.

Flushing the toilet visually removes the body's waste from the public view. To be unable to flush the publicly accessible toilet after use not only contravenes

[26] Following Van Gennep's *The Rites of Passage* (1960)

deeply held social practices but also contravenes a basic element of toilet training (Schum *et al*, 2002), and may therefore reduce the user to a form of infantilism. The misplacement of the flush handle on the wrong side of the cistern, or the wrong product decision of the flush mechanism, such as a push button flush, can result in users not only being unable to complete the toileting ritual, leaving them with a loss of self respect, integrity and trust that form the dignity of identity. In addition, being unable to flush the toilet, which as a key association with toilet training can be considered the most basic of actions, can also be suggested to be a loss of equality and choice (human rights) as well as symbolising a loss of independence and control (autonomy). The placement of the flush and the design of the flush handle for publicly accessible provision (in both accessible and standard cubicles) is key to affording dignity of use in the provision.

It is the culturally accepted norm to complete the toilet ritual by washing the hands after excretion. It is also serves a function of public health to prevent the spread of infection, especially those associated with gastrointestinal function. Hand washing is a dexterous action that requires the correct configuration of supporting products for it to be successfully completed. The failure to afford hand-washing may signal a loss of autonomous dignity, but may also result in failing to afford safety in toileting in denying users the opportunity to clean themselves after excretion and increasing the spread of bacteria. It is interesting to note that one element of hand washing products, namely the hand dryer, may also be incorporated into the management of dignity in the absence of audible privacy through partitions.

Bins are essential within publicly accessible toilets to afford users the ability to dispose of sanitary and toilet related products such as continence pads and catheter, urostomy and colostomy products. As demonstrated by the case of Rosemary Walker, the non-provision of a suitable bin resulted in a loss of dignity. Current bin provision is problematic due to the bins design in itself, in that it may not afford access for users to dispose of items, as well as become

a barrier to toileting in the accessible cubicle. The provision of bins also frames the gendered nature of current toilet provision, being conspicuously available in women's toilets, but unavailable in men's facilities and therefore denying male users the opportunity to dispose of waste such as continence pads, and therefore increasing the population pressure on the accessible toilet where bins are more likely to be found, and affording a dignified disposal of toileting waste.

The elements described above can be considered essential for affording dignity in toileting. They also illustrate the need for linking between the design areas of interior architecture, product design and service design. Where an item is situated within the toilet cubicle may determine its use, but may be inaccessible due to the design of the item, which in turn maybe inaccessible due to how it is serviced or managed.

The experiences of informants concerning the affordance of safety and security within the publicly accessible toilet highlight the complex intertwined relationship between the design decisions based on the external environment, and those of the internal environment. In many instances, it appears the decision of one may affect the other, for example; poor planning and consideration of where to place a publicly accessible toilet may result in an unintended consequence that those who require privacy for non-toileting related activities may experience a greater sense of safety and security and may feel more inclined to leave evidence of these activities (graffiti, destruction of property, paraphernalia associated with illegal substance use and condoms) behind. These can be seen to act as markers of territory, informing other potential users who wish to use the toilet for toileting, that other acts also take place here – and creating a fearful environment for those who find such behaviours upsetting and distasteful.

Informants cited key aspects of the interior of public accessible lavatories as being key to affording safety and security within facilities. Here the research

suggests there are two considerations of safety and security. For example a lavatory with inadequate lighting may feel dangerous to users because they are unable to see the presence of others and also because they are unable to identify potential hazards. The design consideration has to afford a dual sense of safety and security to the self, as potential risk from others, and as potential risk from the environment.

It is interesting to note that women users, despite men being statistically more likely to be attacked in public space, mostly commented on the perceived threat from others (Equality and Human Rights Commission, 2011). Valentine (1990) suggests that women tend to feel more afraid in particular environments, and often build mental images of where violence may occur. Such images are enhanced by 'complex interaction and cumulative effect of first and second hand information sources' and leads to women anticipating themselves to be at risk at key locations (ibid, 1990; 289). Given the institutionlised poor reputation of the public lavatory identified by Kira (1976), it can be suggested that the public toilet holds a deeper negative association beyond many users' personal experiences, especially women. Again, this also highlights a converse effect in which the perceived negative association of public toilets is viewed as beneficial for those seeking private space for sexual encounters, drug use or willful destruction. This Janus nature of the facility provides a particular challenge to the future design of publicly accessible toilets.

Assessing levels of comfort within public space would be difficult to objectify. People have varying levels of comfort that extend beyond current research in the area of thermal comfort (Shove, 2003). Yet research does forge the link between comfort and objects of design, be they products or the wider physical environment (Crowley, 2001 in Shove, 2003). Considering the affordance of products set within the wider physical environment suggests that comfort, whilst not conforming to positivist measurements such as 'levels', do provide 'useful' interventions that, from the experiences of informants, extend their

comfort experience of the publicly accessible toilet, and as suggested for continence management may help users relax when using provision and therefore benefit bladder and bowel health regimes.

This chapter has, from the narrative experiences described by informants, considered affordance beyond the mere function of the external environment and internal fittings of the publicly accessible toilet. By considering experiential concepts such as dignity, safety and security and comfort, the design and provision of toilets can be enhanced to afford and therefore meet users needs. These experiences, and especially the failure of design (architectural, product and service) to afford these considerations linger in the memory for many users, becoming associated with places and spaces to revisit or never to return to.

9. Conclusion; Findings and Discussion

9.1. A paradigm shift.

This thesis seeks to present a paradigm shift for inclusive architectural design. It argues that current design of toilet provision as replicated in the built environment results in architectural determinism, and that users have to adapt their behaviour in order to access unfamiliar publicly accessible toilet provision. Despite guidelines and legislation that have considered access, for many users, especially those with disabilities the architectural determinism of the 'accessible' environment creates continued barriers that challenge and in some cases prevent inclusion to the wider built environment and the amenities it affords. The thesis suggests that a shift in focus from the environment to the body, can, through the use of affordance (Gibson, 1979), shift the resulting user behaviour as one that is determined by the environment, to one of users experiences as afforded by their bodies encounter with the environment. Such a shift presents knew knowledge towards the barriers many people experience and highlights that despite the best intentions of inclusive design, many design outcomes can be considered to continue a 'special needs' approach to access rather then achieving inclusion. The thesis is directed to the design case of the publicly accessible toilet as an aspect of the built environment that is likely to be encountered by a diverse range of users who are both able and disabled.

To counter the existing environmental determinist framework, this work suggests a refocus on user experience to explore what the environment affords the user. The use of affordance not only provides a flexible concept that is already familiar to and employed by designers, but highlights how the environment and its supporting furnishings may be manipulated or rejected by users, based on their experience of previous encounters. Current design recommendations for publicly accessible toilet provision can be considered to contribute to the environmental pressure (Lawton, 1986) of the built environment.

The thesis shifts away from the environment, and concentrates on the body. More so, it does so not from a functional perspective of the body's ability, disability and/or age. Current practice in architecture, views the body through a series of templates that represent functioning norms (Imrie, 2003) and even developments in digital architectural design software (Penn and Turner, 2001), still revert back to the traditional template of an able body unhindered by bodily difference and/or the accompanying artifacts of everyday life, from bags to pushchairs. The experiencing body has been taken into consideration in analysis of city use and transgression, yet this was of the able body (Borden, 2001). By focusing on the experiences of the disabled, able and ageing body, this work highlights how encounters with the built environment might be shared across bodily types and throughout the life course.

The focus on experience presents a challenge for the inclusive design community, much of whose work has focused on a singular user's functional encounter with a product and/or environment. Taking its impetus from the social model of disability, championed by many disability activists, inclusive design has focused on the how design can be made more equitable for a majority of users. Yet its focus on 'extreme users' (Coleman, 1994) has tended to lean towards the limitations of the body's functions and hence revert back to the medical model of disability, with many of the resulting design artifacts continuing a 'special needs' response. Within the built environment, the mantra has been towards creating environments that are accessible, and seeks to challenge the perspective that accessible environments are by default inclusive.

Working with users is central to the inclusive design process, yet these 'extreme users' are often drawn from groups that organise themselves around their body type and therefore situate the users also within the medical model of disability. To address this paradox, the thesis has incorporated a biopsychosocial model of disability in which the reality of the body's ability is considered in conjunction with the barriers the built environment presents, but

has done so from the perspective of categorising the body by its experience of disability, through accident, birth or chronic illness, in recognition that bodies do experience difference but that experience may be shared across bodily types. In framing shared bodily experiences connections can be forged between bodies that may or may not seemingly share the same problems. Such an approach also attempts to reconcile the categories of the disabled body and the aging body, to reiterate that these categories are not static, and that disabled bodies age, and ageing bodies can become disabled.

The paradox of access and inclusion is most clearly illustrated by the design of the publicly accessible toilet in which provision for 'the disabled' in the form of the unisex accessible cubicle is separated from the standard and symbolically 'able' provision. Thus it can be suggested that not only is provision fragmented (Greed, 2003) between providers, but also the provision itself is fragmented between ability. Such separation of cubicles can be considered to provide a 'special needs' solution to provision, one that is endorsed by many people with disabilities, and cannot be seen to be inclusive. How the disabled community might address this is beyond the scope of this thesis, but it does suggest that the inclusive design of the built environment has not yet reached the ambitions it set out to achieve.

The need for toilet provision cannot be ignored, excretion is a biological necessity for life and civilisation requires that this necessity be met by a designated space. In the United Kingdom, the designated space for excretion is a space that houses the WC pan. In the private home, this space can be shared with members of the opposite sex, yet in public space, provision is predominately divided on the basis of sexual differences. In the history of UK provision, it was men who were first catered for; hence the division of toilets cannot be seen as a historical trend. Provision for women was an afterthought in the design of the city (Penner, 2001) and therefore can also be considered to follow a 'special needs' solution, and continue the symbolic separation of space by sex and ability.

Current statistics estimate that 80% of the UK population live in urban areas (ONS, 2011), and that by 2030, this will have risen to 92% (Brown, 2009). Cities require movement for its citizens between places and spaces in which the need to excrete will arise. With an increasing ageing population and longer working lives, meeting the excretory experience of the ageing working body may become paramount in ensuring continued working life, and the provision of toilets becomes essential. Kira (1976) recognised that toilet provision was essential for the movement of the city's population, and identified public provision as requiring design for 'transient' spaces to meet the flow of potential users. Yet the demise of such spaces, coupled with the failure of local and national government to take responsibility for provision, has resulted in the responsibility, like much of the welfare sector, falling onto the private sector, putting the onus on business to provide toilets and creating confusion for users concerning rights of access. This shift has also important ramifications for design in which the public/private toilet providers' choices of fixtures and fittings may take an aesthetic preference over access and continue to design out many potential users.

Lack of provision, especially in the evening when public/private provision is withdrawn with the close of business, may increase costs to the public purse with the requirements of street cleansing to eradicate the evidence of the excretion experience, having taking place through the omission of provision, outside of the socially designated space that houses a WC pan.

Current design guidance in the form of British Standards and the Building Regulations continues the environmental determinism approach in which the experiencing body is absent. Although this was addressed in part by the Women's Design Service (1990), it has not been adopted in the main tools of reference of architectural practice. In addition, the continued separation of provision by ability within the British Standards and Building Regulations also continues to frame the disabled body as different despite the shared experience that all bodies have of excretion, and hence continues the 'special

needs' response and adaptation to fit the environment to the body. Toilet provision is divided between 'them' and 'us' with each of us falling into the category of 'them', depending on which provision meets our requirements of ability or sex. Excretion, although a shared experience of all, is divided by space, which we socially endorse. Women and men prefer their own sex-segregated space, as do many disabled people. Therefore segregation is very much by choice, but can be seen to continue to promote an excluding society through the provision of toilets.

Yet further excluding design practices prevail. Current design guidelines for the unisex accessible cubicle continue to focus on a specific user group, namely those whose mobility requires a wheelchair. Whilst it is essential that this experience is met by design, the rights of access this design promotes is at the exclusion of others whose disability is 'invisible' but who may also require the accompanying adaptations the cubicle provides, generating concepts of 'ownership' that dictate who is permitted to use the accessible facility.

The rigidity of gender separation within publicly accessible toilet provision is rigorously enforced and means that it is not acceptable for a man or a women to assist their partner to visit the toilet without facing opprobrium but, as in the case with the RADAR key scheme, slackening bounds of social convention can open the door to abuse. In the issue of whether or not to lock the accessible toilet, the fear was of vandalism or misuse by non-disabled people, suggests a perspective that all potential able bodied users will abuse the provision. The maintaining of strict gender separation in standard toilet accommodation is to deter sexual harassment when engaging in the intimate activity of using the lavatory in what is, to all intents and purposes, a public space where other users are strangers, yet this also suggests a behaviour deterministic perspective that those of the opposite sex will sexually harass. As such, incorporating an optimal design solution is difficult in both of these cases, whilst finding a compromise between the different users is to engage a

wider debate of bodily difference in society. Therefore to ensure current provision, compromises have to be made.

This provides a paradox to inclusive legislation, with the accessible WC cubicle emerging as a hotly contested space amongst stakeholders in the disability arena. The accessible cubicle can be considered to encapsulate issues of ownership and entitlement that are becoming increasingly socially divisive. Once championed as the symbol of disabled access, this thesis argues that it instead continues the era of 'special needs' response and thus, whilst symbolic of access, it is emblematic of the failure of wider inclusive design.

To support the shift from an environmental deterministic model of the built environment, the thesis has used a secondary analysis of data previously collected under a positivist evidence based model of research. The incorporation of a cultural turn on this data has shifted the focus of the user's participation from response to the environment to experience of the environment, and presents a body centric position that considers how the environment of the publicly accessible toilet affords use. The focus on user experience provides a richer source of information for designers and has been incorporated into design practices such as Human Computer Interaction (HCI), but is not widely incorporated within architectural practice. Qualitative research takes time and can be expensive, hence the presentation of users' experiences within this thesis may offer designers initial insight into the challenges the users face that designers can meet.

However in contrast to the lack of experiential design within architecture, the use of affordance is recognised within architectural, product and industrial design and this thesis presents examples of affordance in users' experiences of publicly accessible toilets. The emphasis on user experience also highlights how design of this provision should not be seen as discreet between the design disciplines but that, the design of the space for access, requires the

design of products that furnish the space to also be accessible, and that the service design of the space also consider key access management considerations. It therefore requires a holistic approach in design that is inclusive of other design disciplines.

The reanalysis of user response, reframed as user experience through the concept of affordance is presented through the narrative of a journey in reflection of the need for mobility in the built environment. The informants' experiences are also presented with quantitative data of the findings of the audit tool from the VivaCity 2020 study to highlight how prevalent these experiences may be in the wider provision of the accessible cubicle. The journey to toilet provision incorporates orientating the body in the environment; the navigation to provision and once the provision is reached the experience of excretion in the privacy of the assigned cubicle.

Once excretion is complete the journey continues to examine how the wider environment of the facility affords dignity, safety and security, and comfort. By drawing on the experience of informants, catergorised not by bodily type but by bodily experience, challenges the dominant design templates rooted in body function and drawn from a medical model of disability that has framed previous studies. Yet these experiences are also framed by gendered, cultural, ageing and ability considerations that highlight how the environment and its supporting products and services fail to afford provision for many different users, and does so from the "cradle to the grave".

Within the design of toilet provision there is consideration of relations of affordance including nested affordances (Gaver, 1991) such as the door handle to the door and the introduction of *sibling affordance* in the relationship of discreet design artifacts to each other such as the WC pan to the toilet paper dispenser.

Dignity is recognised as influenced by the physical world and bounded by social values and is often a considered response in design for disabled people, yet dignity in excretion is something that all users require, and should be considered an acute design response in this specific environment. Safety and security for the self and from others and the environment, are also crucial elements for consideration when one maybe in a state of semi undress and hence vulnerable in this public/private space. The cultural life of the publicly accessible toilet means that it carries with it a potential for behaviours not bound to its primary function for excretion. Design has tended to focus on designing out these behaviours resulting in inhospitable and uninviting spaces in which the body has difficulty relaxing, itself a requirement for healthy excretion. Yet this poses an important question for inclusion, if an environment is to be fully inclusive should it also tolerate practices that might upset our perceptions of civilised behaviour and decency? Or do we design to exclude and merely provide access to those whose behaviour we sanction? Does the continued design response to exclude non-toileting behaviours only encourage such activity in the thrill of transgression?

9.2. Theoretical and Policy Implications

This thesis contributes to a number of theoretical fields. In amalgamating the experiences of multiple groups of users such as; people with visible and invisible disabilities, women, young people, faith groups, and across age spectrums the work provides a unique contribution to the growing field of 'toiletology'. In addition, it's ethnographic content contributes to the growing field of design ethnography and an anthropology *of* design (Gunn and Donavan, 2012).

The concept of affordance has been widely followed in product design, though Normans (1988) identification of *perceived affordances* 'the perceived and actual properties of the thing… that determine just how the thing can be possibly used' (ibid,1988:9). Many aspects of the publicly accessible toilet contain products that individually, should consider their perceived affordance.

Gaver (1991) highlights how some of these items can be considered 'nested affordances' items that are nested within each other to afford use. Gaver's highlights the door handle to the door as an exemplar of this. This work offers a fresh perspective for affordance, that of a *sibling affordance* in which two artifacts can operate independently but share a relationship, such as a WC pan and toilet paper dispenser. Consideration for these artifacts, such as where they are placed, how they are accessed and used, can enable designers to identify relationships between design outcomes, that may enhance the affordance of both products.

Maier et al (2009) considers the consideration of affordance to be crucial for a deeper understanding of the architectural form and highlights how affordances can help architects understand the relationship between the built environment and users, 'especially with respect to form, function and meaning of architecture' (ibid, 2009:394). As a design practice, considering affordance within architecture offers a shared language with other design practices that contribute to the built environment (ibid, 2009:394). The concept of affordance can also benefit architectural practice *'as an evaluation tool to explore the connection between the initial intentions and objectives of design with how the object is functionally used, leading to archived knowledge for use in future projects and the potential for avoiding an array of common design failures'* (ibid, 2009:394). This would be especially pertinent for the inclusive design of the built environment and especially the provision of toilets to overcome the mistakes users regularly encounter that either frustrate or prevent use.

Current design guidelines continue to promote toilet provision for people with disabilities as separate from standard provision. Whilst, it cannot be denied that the unisex accessible cubicle is crucial to access for disabled people, there is a need to relieve the population pressure this cubicle strains to support. One possible policy implication and a step towards a more inclusive environment might be to abandon the current design of the standard cubicle and promote the ambulant cubicle as the 'standard'. This would not only

ensure users would have more space within the standard provision, but also familiarise users with fixtures such as grab rails, their use for support in general life (an injured back, a sprained knee) and possibly reduce stigma on the disabled body by the realisation that all bodies may be in need of additional support at some time in their life. In addition, the 'ambulant cubicle' as standard would also meet the needs of the increasing ageing population who are being required to work longer and therefore will become more prevalent in the cities environment.

The issue of public toilet provision cuts across so many policies, it is difficult to define which department should be responsible for provision. Current provision is the responsibility of Local Authorities and results in a patchwork of provision across the UK, with budget cuts dictating who is and who is not maintaining their provision. However, there must also be consideration for the resources toilets require, and thus any solutions to meet user need must be considered through wider environmental concerns such as sustainable water, energy use and building materials, and could prove expensive for the public purse.

9.3. Study limitations

The volume of data collated for this thesis has resulted in a number of issues, pertinent to the issue of publicly accessible toilet access and inclusion. The thesis initially set out to present how three aspects of design, that of architectural, product and service need to be integrated. However, the theme of affordance, and its prominence in the amount of data collated required a reconsideration of service design aspects such as cleaning and maintaining hygienic standards of the environment to the wider consideration of the political economy of provision and thus was omitted from the thesis in favour of a focus on the affordance of hygiene for the body. Due to the thesis' setting of the ethnographic present, more recent debates concerning the current context of austerity have not been included as the research took place before the global financial crash resulted in deeper cuts to social services.

The categorising of secondary data into three fields defined by accident (A), birth (B) and chronic illness (C) is not representative of population demographics but an attempt to highlight how people with different conditions experience similar problems with the design of the toilet cubicle and the access it affords them. These categories also attempt to move away from the medicialisation of the body's 'condition' as a way of classifying informants.

9.4 Recommendations for future research

A current gap in interdisciplinary knowledge regarding publicly accessible toilets centres on the economic cost of not having provision and the need for street cleaning, the health costs of a lack of provision in contributing to social isolation and loneliness, as well as the cost to local businesses in areas that do not provide public toilets.

Within the area of design this thesis presents a number of artifacts that are in need of further exploration. Many of the current fixtures and fittings from the tap to the toilet paper dispenser would require re-consideration for inclusive toilet environments with design decision recommendations focusing on who might be excluded if a certain design is implemented. Design exclusion calculators are in current operation and these could be extended to all aspects of the standard and accessible cubicle to quantify populations who may not be served by current design.

Further research may be undertaken in which participants within the proposed categories of accident (A), birth (B) and chronic illness (C) are weighted to represent population demographic and therefore, not only test this experiential hypothesis, but also refine the categories as a useful tool for inclusive design.

As a detailed presentation of UK design guidance and the experiences of UK users, this research could be extended on an international scale to understand design decisions and user experiences in counties currently following inclusive design strategies such as Norway and Japan as well as

countries who are beginning to adopt wider sanitation and infrastructure projects, such as India, to ensure that an accessible and inclusive environment can be delivered from the concept stage.

'Toiletology' is a growing field of research that incorporates feminist (Greed, 2003; Penner, 2001; 2009; 2013) transgendered (Herman, 2013), queer (Cavanagh 2010), and disability (Kitchin and Law, 2001; Bichard and Hanson, 2009; Serlin, 2010) perspectives, and highlights how central 'the body' is to wider theoretical knowledge. Much of this work has focused on the body's use and experience of space, and has demonstrated how the design of spaces for elimination has determined rights of access not only to that space but the wider built environment. Harvey's (1990) work on time may offer a useful addition to wider analysis of this particular space, from the context of access provision (from queues for women to pre-planning for people with disabilities) to use (the removal of clothing, the desire for safety, security, comfort and dignity), and ensuring successful excretion is not rushed for wider health and wellbeing of the body. This work maybe especially pertinent to the wider practice of timed toilet breaks in some areas of work.

9.5 Conclusion

As this thesis was being finalised, the author witnessed an interesting incident in her local train station. Whilst queuing for a train ticket, a mother with three young children asked if she could go ahead of her to request access to the toilet signed "Toilet facilities are only for customers with disability" (figure 61) On asking at the ticket office is she could use the toilet the mother was told 'no, the toilet is only for disabled people'. The mother accepted this answer and explained to her child that they would have to wait a little longer and proceeded to the platform to catch her train. A few weeks later, the author received an e-mail detailing a similar experience of access denied at the same station.

Subject: *Re: FW: gender and toilets*

Date: *29 August 2014 01:33:23 GMT+01:00*

Speaking of station toilets I had an interesting experience in St Leonards Warrior Square recently. There is a disabled toilet only, but the non-disabled toilets have been closed and you're expected to go to the pub about a 5 minute walk away. When I asked the woman at the ticket office if I could use it she immediately said no (I didn't press the issue because I was asking more out of curiosity than because I needed to go at that point.) I did ask her why there weren't toilets and she said they had closed due to vandalism and drug use.

It's an interesting turning-on-its head of the normal issue of accessible toilets not being readily available, but it also strikes me that because I wasn't a wheelchair user she made a snap judgement that I didn't qualify for the toilet (where does that leave people with invisible disabilities?)

Is this a common thing? Has anyone else encountered situations like this?

Publicly accessible toilets present a site or entrenched cultures of tolerance and intolerance. These centre on our relationship to our own bodies and those of others with whom we share the space. The legislation of the DDA coupled with an inclusive design perspective was perceived as having a bottom up affect in that making environments accessible for people with disabilities would make the environment more accessible for all. Instead, as the example above highlights, the response has in some cases, provided special accommodation based on the stereotypical representation of disability as a singular issue, at the exclusion of others. This presents a challenge for the disabled community itself to decide if there should be a break from the 'them and us' model of access to one that incorporates wider considerations of inclusion. However, with austerity cuts in welfare support hitting the disabled community especially hard, this also presents a challenge for central government. If we are to ensure the city and its opportunities for employment are taken up by disabled people to ease the cost of welfare, the city has to be accessible and the cornerstone of this access for inclusion is the provision of toilets that meet the requirements of all potential users, and hence this is one of the challenges for inclusive architectural design.

Figure 61. Disabled Access Only - Inclusive or special needs?

Appendices

Appendix 1: Research Outputs and Publications

Appendix 1 provides information on the research activities and outputs delivered by the author during the undertaking this part time PhD research.

RESEARCH AWARDS

- *In Review Designing Hopeful Worlds,* Co-Investigator (University of West of England (lead) and Brighton University). AHRC Connected Communities Programme REF: AH/M000206/1 £ 1,335,534.30
- 02/13-01/15 *Family Rituals 2.0*, Co-Investigator (Newcastle University (lead), University of the West of England, Bournemouth University). EPSRC Digital Economy Programme Creativity Greenhouse Achieving Work/Life Balance in a Digitally Dependent World Grant Number EP/K025678/1 £719,729.71
- 03/14-08/14 *Mapping UK Conveniences*, Nominet Trust £20,000
- 10/13-09/14 *Inclusive Human Machine Interaction*, Cambridge University and Jaguar Land Rover £40,000
- 02/11-07/11 *Robust Accessible Toilets (RATs)* Principal Investigator; ESRC Connected Communities Programme Grant number RES-139-25-0006 £12,036. Assessed Very good.
- 11/08-04/12 *Challenging Environmental Barriers to Continence; Tackling Ageing Continence through Theory Tools and Technology (TACT3*). Co-Investigator. (Brunel University (lead), Sheffield University, University of the West of England, Manchester University New Dynamics of Ageing ESRC Grant number RES-353-25-0010 £1,289,331.60. Assessed Very good.
- 01/07-12/08 *Welcoming Workplace; rethinking office design to enable growing numbers of older people to participate in the 21st century knowledge economy*. Co- Investigator EPSRC / AHRC Design for the 21st Century Programme Grant number AH/E507948/1 £185,676

PROFESSIONAL ACTIVITIES

- AHRC Peer Review Panel
- Editorial Board of *Design Exchange* magazine (2014-2015)
- Editor The Design Journal Special Edition on Inclusive Design 2013
- Peer Review for; The Design Journal, The Journal of Engineering Design, Home Cultures, International Journal of Disaster Resilience in the Built Environment, Disability and Rehabilitation, Transportation Research Part C.
- PhD External Examiner - Duncan of Jordonstone College of Art & Design, University of Dundee.
- External Critical Panel - Department of Architecture, University of Cambridge

KEYNOTE, INVITED PRESENTATIONS AND PUBLIC ENGAGEMENT

2014

- (a)Dressing the Ageing Demographic; Comfort in Living. Innonet Consortium Partner Meet, Borkop, Denmark, June
- Interdisciplinary Design; the HHCD Work & City Lab. IMAGINE Sheffield Business School, Sheffield Hallam University, March

2013

- Affording excretion: extending the design brief for the accessible toilet; Universalising Design 'Design for all' and responding to the manifold nature of embodiment, ESRC Seminar, Westminster, December

2012

- 'Bright Club; Building' UCL Public Engagement Programme (September)
- 'Bright Club; The Lest Best Party' UCL Public Engagement Programme (December)

2011

- The Trouble with Toilets at Toilet Talk: Women's Needs Seminar, Women's Design Service, The Building Centre, London, July
- 'The Role of Older People in Designing' at KT Equal: Empowering Older People to be active researchers, thought-leaders and influencers. Reading Town Hall, January

2010

- 'Toilet Provision for an Ageing Population' at KT Equal: Continence Matters, Brunel University, December
- 'The Inclusive Workplace' Business Breakfast DoGA, Norwegian Design Council, Oslo, Norway. November
- Plantonics Satellite Session 'Smarter working for the ageing workforce' in Quality of Life: Social, Economic & Ergonomic Challenges for Ageing People at Work, European Ergonomics Conference, Brugges, Belgium. October
- 'Mobility and Public Amenities' at Age Supportive Built Environments, UK/Canada study tour London Metropolitan University, March
- 'Access to Public Space' at Designing for our future selves - exploring the links between ageing societies & sustainable design UK/Japan seminar in collaboration with the Oxford Institute of Ageing, St Katherine's College, Kobe, Japan. January

MEDIA

- Toilet Talk (2011) Directed by Marie Lenclos, commissioned by the Women's Design Service
- 'Desperate Need For Public Loos' letter *The Independent* 12/02/2011
- 'Caught short; London's public toilet shortage' BBC World Service 20 March 2009

BOOKS

- Myerson, J., Bichard, J. & Erlich A. (2010) *New Demographics, New Workspace: Office Design for the Changing Workforce*, Gower, UK

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- Bichard, J. (2014) 'ExcLOOsion: How sanitary provision is failed by design' in Diversity and Design: Understanding Hidden Consequences Eds, Korydon Smith, Charles Davis, and Beth Tauke, Routledge *(invited contribution)*
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- Myerson, J. & Bichard, J. (2009) 'Welcoming Workplace: Rapid Design Intervention to Determine the Office Environment Needs of Older Knowledge Workers' in *Design for the 21st Century Volume 2: Interdisciplinary Methods and Findings*. Ed. T. Inns, Gower, UK
- Bichard, J. & Hanson, J. (2009) 'Inclusive Design of 'Away from Home' Toilets' in Designing Sustainable Cities. Eds R. Cooper, G Evans & C. Boyko. Wiley-Blackwell, UK
- Bichard, J., Langdon, P. & Coleman, R. (2007) 'Does My Stigma Look big in this? Considering the Acceptability and Desirability in the Inclusive Design of Technology Products' in Universal Access In Human Computer Interaction. Coping with Diversity, Springer, Berlin/ Heidleberg,Germany pp 622-631
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- Erlich, A & Bichard, J. (2008) 'The Welcoming Workplace: Designing for Ageing Knowledge Workers' in Journal of Corporate Real Estate Vol. 10 No. 4, pp.273-285

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- Bichard, J., Knight. G. & Greene, C. (2010) 'Tackling Ageing Incontinence (TACT3)' in Access By Design, The Journal of the Centre for Accessible Environments, Spring
- Gheerawo, R. & J. Bichard. (2008) 'Living Independently: accessing aspirations for kitchen design' in Access by Design: The Journal of the Centre for Accessible Environments Issue 114, Spring
- Hanson, J., Bichard, J. & Greed, C. (2007) 'Accessible Public Toilets in City Centres: The final Instalment?' in Access By Design; The Journal of the Centre For Accessible Environments Issue 112, Autumn

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Appendix 2. Extending the interior of public lavatories

Appendix 2 provides additional information on interior design guidelines for publicly accessible toilets as described in chapter 4. Sections on ambulant provision and 'changing places' cubicles, offers additional information for consideration in the overall design of provision, as laid out in the specific guidance. These designs were not prevalent during the course of primary research and thus many users had not encountered these designs.

A2.1. BS8300 (2009) Ambulant layout

BS8300 also provides illustration of the layout for an ambulant accessible cubicle. Unlike BS6465, the recommendations in BS8300 include dimensions for one of the cubicle space. Two options are offered, the first incorporating an outward opening door and a cubicle dimension of 800 mm width by 1500 mm length. The second layout follows the more ambiguous recommendations of an inwards opening door layout, suggesting a width of 1000 mmm but only incorporating a circle of clearance of 450mm between the door and the WC pan. Although the standard recommends the use of a close-coupled cistern to provide 'shelf' accommodation for colostomy changing, neither diagrams include illustrations for bins, either to accommodate sanitary nor colostomy/urostomy uses. However, of specific interest is the inclusion of guidance for an ambulant layout within the BS8300 guidance, as this specific design would be found in standard toilet accommodation.

A2.2. Changing Places Sanitary Accommodation

A major change to the BS8300 (2006) guidelines was the inclusion of design recommendations and a commentary for a Changing Places (CP) facility. These larger cubicles have been designed to support the needs of disabled people with complex and multiple disabilities, and who may need the support of one of more carer. CP facilities have more space to accommodate more people and larger wheelchairs that may have extended leg plates or oxygen supplies. In addition to extra space, the CP facility also has an adult changing bench and a fixed track hoist system. CP provision is recommended in the

standard for *'any larger building where the public have access in numbers or where visitors might be expected to spend longer periods of time'*, and that *'such facilities are particularly important in buildings that might offer the only suitable sanitary accommodation within a locality, or in buildings where public services are provided, such as those operated by local authorities'* (BS8300;2009:151). The commentary makes it explicit that CP provision is not designed for independent wheelchair users or as baby change, and that it is *desirable* that information on the nearest unisex accessible and baby changing provision is provided. The introduction of the CP facility in the standard has been based on a concerted campaign carried out by the `Changing Places Consortia'[1]. Currently, the consortia have mapped 412 Changing places facilities around the United Kingdom[2].

The list of buildings that should support a CP facility include;

- major transport termini or interchanges, e.g. large railway stations and airports;
- motorway services;
- sport and leisure facilities, including large hotels;
- cultural centres, such as museums, concert halls and art galleries;
- stadia and large auditoria;
- shopping centres and shopmobility centres;
- key buildings within town centres, e.g. town halls, civic centres and main
  public libraries;
- educational establishments;
- health facilities, such as hospitals, health centres and community practices.

[1] The Changing Places Consortia include; The Centre For Accessible Environments, PAMIS, MENCAP, Nottingham City Council, Dumfries and Galloway Council, Valuing People Support Team, Scottish government.
[2] http://www.changing-places.org/

CP provision ideally should be placed close to other managed facilities, and should be in addition to unisex accessible and bay change provision. The facility should be locked by the universal locking system (RADAR National Key Scheme).

The following dimensions and fittings for CP provision are recommended;

- 3m width
- 4 m depth
- 2.5 m height
- 1000mm door width
- Peninsular WC layout [3]
- A retractable privacy screen for the dignity of disabled people who may be ale to use the WC pan on their own, as well as for assistants who may wish to use the toilet after seeing to the needs of the person they are caring for.
- Quiet ventilation fans so as not to cause distress or act as a barrier towards communication between a disabled person and their carer.
- A good ambient temperature (heating) as users of CP provision maybe undressed for extended periods of time.
- A minimum of 300 lux luminance. Timed lighting or ultra-violet light should not be installed.

In addition to guidance on the positioning of fixed hoists and the maximum weights that both the hoist and adult changing bed should support, the standard also makes recommendations on types of bins including a sanitary bin that is 'large enough to accommodate adult-sized pads' (BSI, 2009:152). This suggests that current waste disposal can accommodate both menstrual and other body wastes and therefore sanitary bin provision could be amalgamated to include provision for adult changing pads and colostomy and urostomy bags. Future design standards may include the space allocation for

[3] A peninsular layout places the WC pan at the centre of a back wall to afford assistance from one or more carers with toileting.

bins that incorporate inclusive use of the standard toilet cubicle as well as blur the gender association of a cubicle supporting a bin being solely for the use of female users.

Appendix 3: Strategies.

Appendix 3 provides additional information on the theoretical underpinnings and methodological strategies as described in chapter 5. The strategies outlined below were incorporated into the original RCUK research from which secondary analysis was undertaken for this thesis.

A3.1. VivaCity 2020 Advisory Committee

To steer the research, an advisory committee consisting of stakeholders comprising user group representatives and experts with a specific knowledge on and/or around public lavatory provision was established to oversee the direction and development of the project. The committee comprised members of: Ideal Standard UK and Sissons Ltd, City Authorities of Westminster (London), Manchester and Sheffield, The Department of Trade and Industry, The British Institute of Cleaning Science, the Centre for Accessible Environments, Staffordshire Police Constabulary Architectural Liaison, Is There An Accessible Loo (ITAAL) and the British Toilet Association.

During the first meeting of the advisory group it was suggested that the research adopt the term ‘away from home’ toilets into the project’s title. ‘Away From Home’ toilets is used by the British Toilet Association to describe not only provision operated by local authorities, most commonly referred to as ‘public toilets’, but also to include those toilets used by members of the public but managed by private concerns such as fast food outlets, supermarkets, petrol stations, cafés, bars and shopping centers. The project researchers inserted the bracketed (Public) into the project’s title when, in the early stages of participant recruitment in the research, it became apparent that users were not familiar with the term ‘away from home’.

More recently, the term ‘away from home’ has been replaced with the phrase ‘Publicly Available Toilets’. This has been brought into use by Gerry Brophy of

Hatfield Police, who in collaboration with Gillian Kemp and the British Toilet Association, re-wrote the police recommendations for designing out crime in public and privately managed toilets. This issue of naming and rephrasing toilets is in essence an attempt to re-brand public toilets, and highlights the wider understanding of the need of these facilities but the poor image those provided by local authorities have been given. In addition, such concern over how toilets should be termed echoes that of the accessible / disabled toilet debate.

A3.2. VivaCity 2020 Interviews

Given the nature of the research into the use of the publicly available toilets, interviews were held in-person on a one-to-one basis to ensure privacy and avoid embarrassment for the participant and the researcher/author. In addition, a certain degree of flexibility was incorporated into the practical arrangements of interviewing. Participants were invited to be interviewed in a private office based at the university department or if it was more convenient, the researcher / author offered to conduct the interview in a location more convenient to the participant (their home or a location of their choosing that could offer a suitably quiet and private environment for interview).

However, such flexibility does not always stretch to the funding and timetable demands of a university research project and hence for some participants, especially those based outside of the main research case study areas,[4] the best option for contributing to the research was through a telephone interview that was held at a pre-arranged time. Telephone interviews were conducted at the university research offices and used the semi-structured interview template of the one-to one interviews and focus groups. In general face-to-face interviews lasted between 60 and 90 minutes, and telephone interviews

[6] The VivaCity 2020 consortia conducted case studies of key areas including, London (Clerkenwell), Manchester and Sheffield. In addition the Inclusive Design of away from Home (Public) Toilets in City Centres work package conducted case studies of provision in London (Westminster and Richmond Upon Thames), Cambridge, Milton Keynes, Liverpool and Nottingham. The case studies of Liverpool and Nottingham were as a direct result of users participation in research interviews and interest in the project.

between 45-60 minutes. Each interview and focus group participant was given an information sheet about the research, and asked to sign an informed consent form. Participants in telephone interviews were initially sent the research information sheet to read prior to interview. Each recorded telephone interview would begin with the participant acknowledging that they had read the research information sheet. The informed consent form was then read to the participant and filled in by the researcher on verbal agreement from the participant. Telephone interviewees gave verbal consent to the interview, which was recorded using telephone voice recording equipment.

Elmwood & Martin (2000) argue that an important consideration in the planning and practice of qualitative interviews should include where the interview will take place. They suggest that location can reflect power relations between interviewer (researcher) and interviewee (researched). Elmwood & Martin cite Falconer-Alhindi (1997) who suggests that focus groups held in participants' homes disrupt power hierarchies that favour the researcher. In summery, Elmwood & Martin suggest that a key practice in qualitative research interviews is to talk to the research respondent about the content of the interview and where the respondents would like the interview to take place, so that they feel comfortable during the interview process.

Although not explicit, the flexibility of offering the VivaCity 'toilets' participants an option for a choice of locations for the interview, allowed people who had mobility concerns the option to participate on their own terms. The majority of the interviews and focus groups were conducted in community centres that were convenient and known by the research participants. Additionally, participants contributed through interviews and focus groups carried out in their homes or through interviews and focus groups held at either their workplace or a service site, or at a site of their choosing (one interview was conducted in a restaurant). Six research participants came to the research office at UCL to be interviewed. However, no focus groups were held at the university site due to the inaccessibility of the building.

A3.3. Promoting the VivaCity 2020 Research

As discussed in chapter 5, in the initial stages of participant recruitment, letters containing supplementary research information were sent to user groups and charities that represented people with disabilities and /or long-term health conditions. When adequate numbers were not recruited, the author, who had received an MSc in Science Communication, contacted a number of editors of user, patient and social group newsletters, offering to write an article about the research outlining the context of the investigation (the lack of toilet provision and the problems of access to facilities), why it might be of interest to the readership and giving details of how readers to contact and participate in the project.

Articles describing the project were forwarded to the following:

- ITAAL (Is There An Accessible Loo) Privy Counsel Newsletter
- Magic Carpet: Official magazine of the Disabled Drivers Association
- Gut Reaction: the journal of the IBS Network (now The Gut Trust)
- Spinal Injuries Association
- Arthritis Care
- National Childbirth Trust.
- Tidings: The British Colostomy Association
- Smart News: The newsletter of the Sarah Matheson trust
- Islington Community News

Articles about the research were also published in the sector's leading journal, Disability Now and calls for participants were published on websites belonging to the Alzheimer's Society, the Disabled Parents' Network and community based website the Enfield Over 50's Forum.

The promotion of the research through user group newsletters lead to a surge of research participants, which afforded the VivaCity 2020 toilets project the opportunity to more than double its number of qualitative participants from the target of 100 to 205. This greater response ultimately lead to a deeper and

wide ranging understanding of people's experiences of publicly available toilets, and highlighted the tensions that arise between users of these facilities.

A3.4. Creating Personas for the VivaCity 2020 project

The principal output of the qualitative interviews, focus groups and written communication was the development of 'personas'. Personas are acknowledged as a critical design tool that are used to communicate relevant user issues and can help centre the user as the focus of the design process (Pham & Greene, 2003). Suri & Marsh (2000) emphasize that great care has to be taken in the development of the persona to avoid stereotyping, so that existing stereotypes concerning the user are not perpetuated, therefore disempowering the user and focus of the persona.

Don & Patrick (2003) point out that personas can sometimes be resisted amongst designers as being a marketing tool, especially if business goals have become confused with user needs as the persona's focus. Therefore it is important that personas communicate a valid user goal which helps personalise the message the persona conveys.

Within the VivaCity personas, the perception of creating stereotypes by the researchers was avoided by returning the persona to the user groups for comments, critiques and eventual shared ownership. The user goal was focused on what the persona likes to do when in the city centre, and how the current design of toilets may impede their goal.

A3.5. Conducting surveys for the VivaCity 2020 research

The locations and times of the street surveys were undertaken at the start of case studies of the areas toilet provision. The first survey took place in Clerkenwell on Saturday June 26 2004 during the first Architectural Biennale. This week long event saw parts of the area grassed over and livestock introduced to the city's streets. Westminster's Street survey also took place on

a Saturday 4 September 2004 at ‘Liberty’, London’s Disability Rights Festival, a one-day disability awareness-raising event hosted by the Mayor of London in Trafalgar Square. The street surveys outside of London took place in June and July 2005. Manchester’s street survey took place on Saturday June 25 at the two city central locations of Deansgate and Piccadilly Gardens. Sheffield’s street survey took place in the Peace Gardens and Mount Street on July 16 2005. The street surveys were conducted on Saturdays as this was gauged to be the day of the week when most people would be accessing the city centre for leisure purposes and would therefore not mind being briefly stopped. In addition, choosing a Saturday to submit the survey also gave the opportunity to question a larger age range of people, as opposed to a ‘working age’ range who may be the main city centre visitors during the week.

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